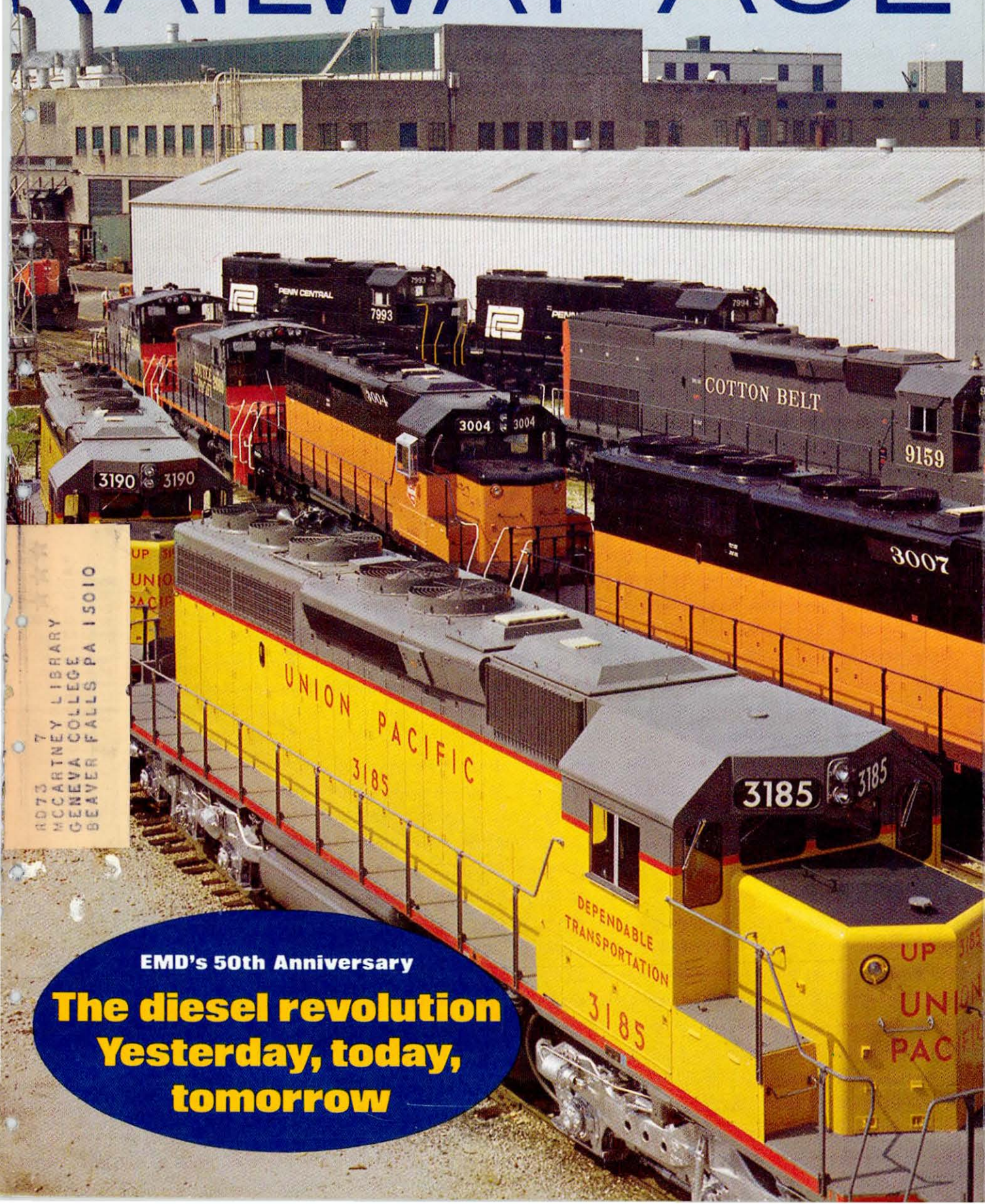
McCARTNEY LIBRARY
GENEVA COLLEGE

SPECIAL REPORT: INDUSTRIAL DEVELOPMENT

August 28, 1972

SEP 7 1972

RAILWAY AGE



RD73 7
McCARTNEY LIBRARY
GENEVA COLLEGE
BEAVER FALLS PA 15010

EMD's 50th Anniversary

The diesel revolution Yesterday, today, tomorrow

McCARTNEY LIBRARY
GENEVA COLLEGE
SEP 7 1972

SPECIAL REPORT: INDUSTRIAL DEVELOPMENT

August 28, 1972

RAILWAY AGE

RD73 7
MCCARTNEY LIBRARY
GENEVA COLLEGE
BEAVER FALLS PA 15010

EMD's 50th Anniversary

The diesel revolution Yesterday, today, tomorrow

37,154 locomotives ago

Electro-Motive started back when the Diesel locomotive was barely a dream. Today, it's been hailed as a big idea, and railroads around the world count on us for their motive power. We're delivering. At the rate of five new locomotives a day.

The Diesel locomotive is an even better value now than it was back when the railroads proved it could do twice the work of steam, for half the cost. In 1946, the railroads paid more than $100 per horsepower. Now the cost is down to about $80 for a comparable model. And included in the bargain is twenty-five years of engineering improvements, and parts that are interchangeable with most earlier models.

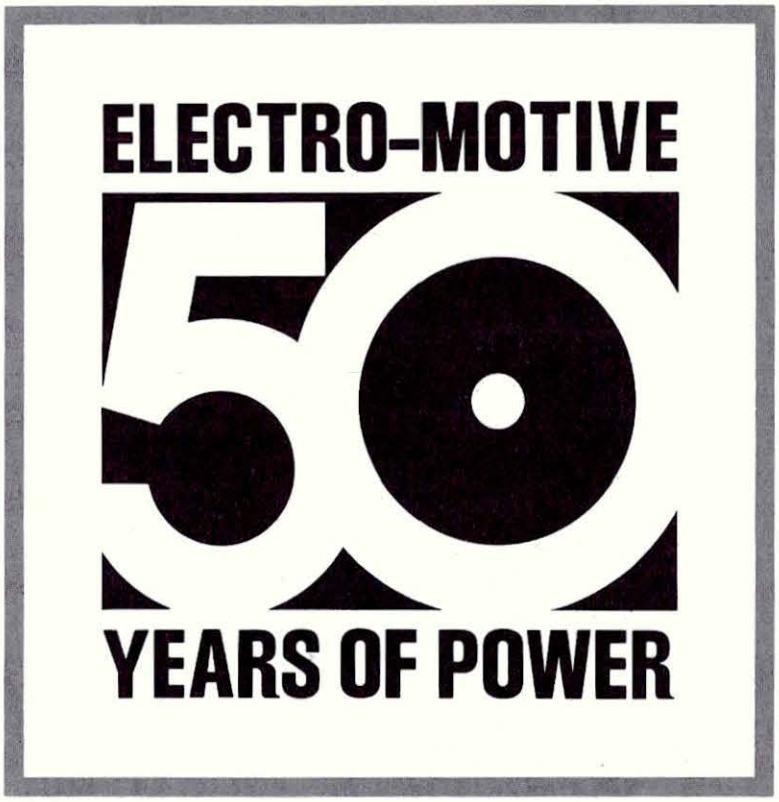
More than 70% of the locomotives we've made are still hard at work. Most of the others were traded in on new, improved models. And some have racked up millions of miles of hard hauling.

The 11,000 people at Electro-Motive are also making a big contribution to our international balance of payments. Last year we exported more than $115 million worth of locomotives, engines and parts.

Right now we're working hard on the innovations in motive power that will make rail transportation even more efficient. We consider it our obligation.

GM
MARK OF EXCELLENCE

Electro-Motive Division
La Grange, Illinois



Circle 2 on coupon page 69

It's a long way to Tipperary.
Especially with your engine intake filters shot.

Now, AAF offers a 90-day filter with a margin of safety should your filters not be serviced on time. At the same time, you get top performance and reliability with the AMER-Kleen engine intake disposable cartridge filter with the Double-Pak design.

The AMER-Kleen cartridge comes with an anti-surge frame assembly to protect against turbo-surge. It won't support combustion. It's enclosed to protect the engine from rain, wash-rack water and chemicals. It installs in about 20% the time of other filters.

Add to that fact that you don't add a lot of inventory—one size fits all locomotives.

Safety. Economy. Get all the facts. Write Manager, AAF, Air Filter Products and Systems, Dept.111, Box 1100, Louisville, Kentucky 40201. In Canada: 400 Stinson Blvd., Montreal 9.

Better Air is our Business.

AAF American Air Filter
RAILROAD PRODUCTS

Don't take a chance—take AAF quality engine intake filters. See us at the show, Booth 225 in Chicago, Sept. 16th-20th.

Circle 3 on coupon page 69

RAILWAY AGE

August 28, 1972 • Vol. 173 No. 4

Editorial and Executive Offices
New York, N.Y. 10013, 350 Broadway
(212) 966-7700

ROBERT G. LEWIS: Publisher
LUTHER S. MILLER: Editor
FRED C. MILES: Executive Editor

Mechanical: Fred N. Houser
Transit: Joe Asher
Art Director: Maurice H. Mates
Editorial Assistant: June Meyer
Librarian: Edith C. Stone
Production Manager: Fred B. Hecht
Manager—Contract Department:
Constance Nicolai
Promotion Director: George Dusenbury

Editorial and Executive Offices
Chicago, Ill. 60602, 29 E. Madison St.
(312) 641-5815

C. JAMES FISHER: Vice President—Sales
GUS WELTY: Senior Editor

Mechanical: Robert D. Bartley
Engineering:
Merwin H. Dick R.E. Dove
Signaling & Communications:
Robert W. McKnight
Editorial Assistant: Wanda Brown

Washington, D.C. 20004,
National Press Bldg. (202) 347-1155
Washington Editor: Reid Beddow

Brighton, Sussex, England
8 St. George's Place (Brighton 685867)
International Editors:
John Levett Paul Goldsack

Advertising Sales Offices:
See Advertising Index

Railway Age, established in 1856, is indexed by the Business Periodicals Index and the Engineering Index Service. Name registered in U.S. Patent Office and Trade Mark Office in Canada.
Published semi-monthly by the Simmons-Boardman Publishing Corporation, 508 Birch St., Bristol, Conn. 06010.
Railroad employees' subscription rate, U.S. possessions, Canada and Mexico, $6 one year, $9 two years, all others $15 for one year, payable in advance and postage paid. To railroad employees elsewhere in the western hemisphere, $10 a year; in the eastern hemisphere, $15 a year. Single copies 60¢, except special issues.
Address all subscriptions, change of address and correspondence concerning them to Subscription Dept., Railway Age, P.O. Box 530, Bristol, Conn. 06010.
Change of address should reach us three weeks in advance of next issue date. Send old address with new enclosing, if possible, your address label. Post Office will not forward copies unless you provide extra postage.

Member of ABC RPI

Circulation Dept.: John Rogers Director of Circulation, 350 Broadway, New York, N.Y. 10013. POSTMASTER—SEND FORM 3579 TO P.O. BOX 530, BRISTOL, CONN. 06010.

Printed at the Hughes Printing Co., 34 North Crystal St., East Stroudsburg, Pa. 18301. Second-class postage paid at Bristol, Conn., and at additional mailing offices.

supporting
ASTRO

Inside

LUTHER MILLER

HINDSIGHT AND FORESIGHT

Having devoted 14 pages in this issue to the stirring (and not entirely predictable) changes that have taken place in the 50 years since the founding of Electro-Motive, we looked back—with some trepidation—to see if our foresight measured up to our hindsight. This is what we had to say on the subject back then (RA, Jan. 7, 1922, p. 50):

"It is possible that the recent development of the compound Diesel engine in this country will go a long way toward solving the problem of the Diesel locomotive and that it will find a definite field in railroad work. . .It may require years of work to perfect and bring into extensive use the Diesel locomotive, but a number of such machines undoubtedly will be constructed in the near future and the results obtained will be watched with interest."

Not 20-20, maybe. But close.

CHICAGO IN SEPTEMBER: AN IDEA MARKETPLACE

A short item in the July 31 issue of Railway Age on the Frisco's use of train-handling indicators brought a quick response from the superintendent of a railroad 1,000 miles away: Where, he asked, could he get further information about this new device? Being in the idea-communicating business, we were pleased with this response—as we have been with several hundred similar inquiries received this year, deriving from feature articles, new-product items, and advertisements.

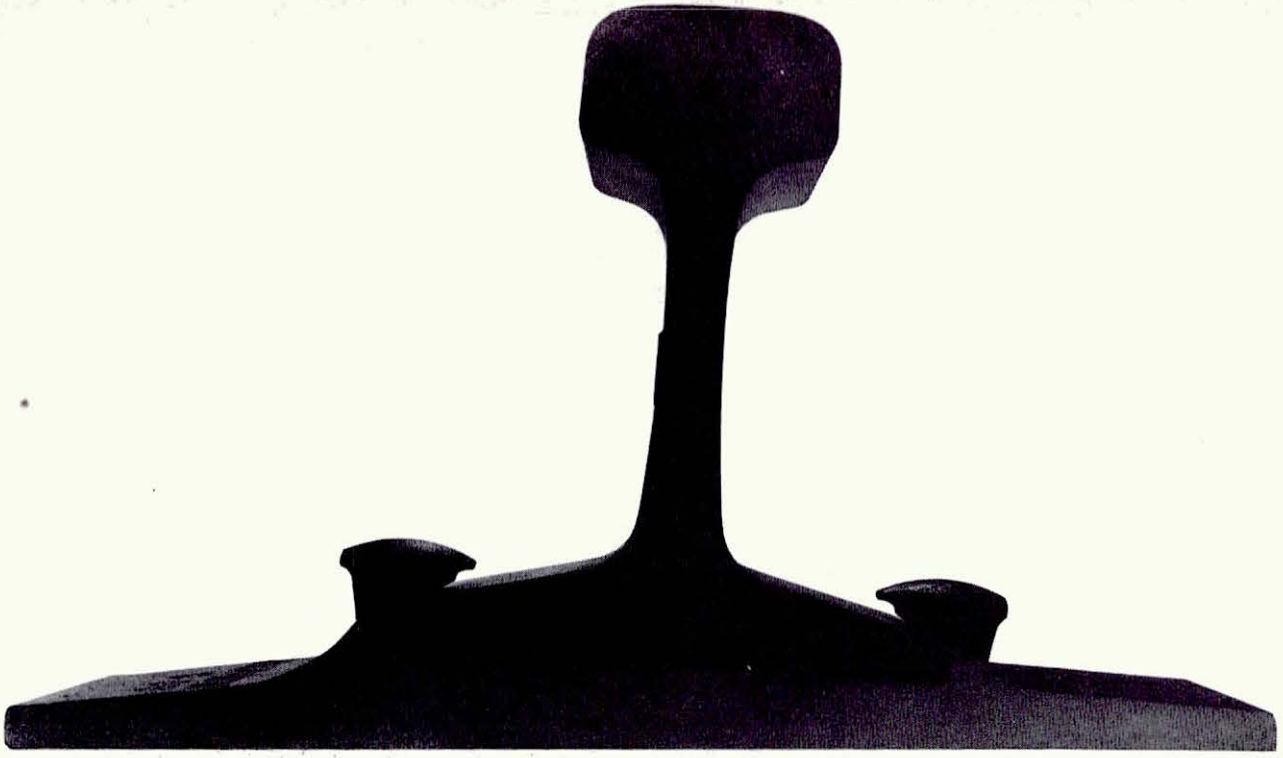
Serving as an idea exchange is, of course, the basic function of any trade publication, whose readers face common problems but rarely have the opportunity to get together and compare solutions. Right now, the idea we want to offer is that such an opportunity *will* present itself soon—and it's one that shouldn't be missed.

A number of railroad associations will be holding their annual meetings in Chicago in September. The Coordinated (Mechanical) Associations and the Roadmasters and Bridge and Building Associations will meet Sept. 18-20. Sessions of the Communication and Signal Section and the Data Systems Division will be held Sept. 26-30.

In connection with the Coordinated meetings, about 75 manufacturers, under the aegis of the Railway Supply Association, are putting together an indoor/outdoor railway equipment show. There will also be exhibits along with the C&S and Data Systems meetings.

Maybe you're like the farmer who declined to enroll in an extension course because he already (he said) knew how to farm better than he did.

Or perhaps, like the railroader who didn't know about train handling indicators, you feel you can still learn something. If you're among the latter, Chicago is the place to be in September.



Hi-Si® rails. Hi-Cant tie plates. CF&I's answer to the heavy stresses of heavy traffic.

Several of our large railroad customers have taken a strong new step in the battle against rail wear. The step we're talking about is two-fold.

First, our Hi-Si (high-silicon) rails. Which have proven themselves on curves. And on tangent track.

Second, our Hi-Cant tie plates. In the past three years of use, this innovative hardware has significantly lessened curve wear on the gauge side of rails and reduced metal flow.

Hi-Cant tie plates cause wheel loads to be distributed uniformly across the running surface of the rail rather than to be concentrated at the gauge corner.

The astonishing result in one case was that the mill scale was still intact on the gauge sides of high rails 3½ to 4 months after installation. Months later, the customer reports "We have had absolutely no wear on the gauge corners of rails in which the Hi-Cant tie plates were installed."

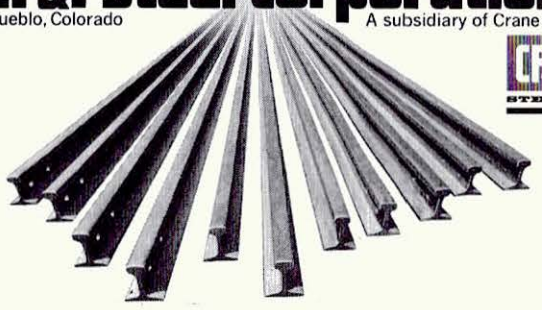
This same customer has now standardized on Hi-Cant tie plates in conjunction with his regular rail laying program. To further reduce rail wear and shelling on curves, he has also begun the practice of installing our Hi-Si rail on both sides of curves in excess of 4 degrees.

If you're concerned about costly replacement demands due to heavy shelling and premature rail wear, by all means talk to CF&I. The steel men who helped build the West are ready with new products and processes to keep you rolling. Like our Hi-Si and Hi-Cant, for example. In combination or individually.

Write us for our complete Railroad Information Package. Write CF&I, Pueblo, Colorado 81002.

We serve you right– and have for 100 years.

CF&I Steel Corporation
Pueblo, Colorado
A subsidiary of Crane Co.



Circle 4 on coupon page 69

RAILWAY AGE

August 28, 1972

NEWS

LEGISLATION — Rail-bill backlog awaits returning Congress. . . . p. 13

TRAFFIC — Industrial development activity up in 1972 . . . . p. 8

BN coal traffic is expanding . . . . p. 16

PC proposes "pipeline on wheels". . . . p. 84

RI takes an intermodal approach . . . . p. 84

MERGERS — ICC's Tuggle defends (and attacks) diversification . . . . p. 18

ICG: Long courtship, whirlwind marriage . . . . p. 57

THE FUTURE — Railroads in 1980—a DOT projection. . . . p. 54

Rail haul proposed for Arctic oil . . . . p. 57

TECHNOLOGY — 253 computers in use on railroads . . . . p. 8

Brackets prevent lateral load shift in DT&I gondolas. . . . p. 64

OPERATIONS — Run-through operations increase . . . . p. 84

Standard paperwork speeds containers. . . . p. 84

FEATURES

EMD's 50th Anniversary

The diesel revolution: Yesterday, today, tomorrow . . . . p. 21

B.B. Brownell: We can see nothing but growth. . . . p. 28

CMOs look at today's motive power. . . . p. 32

Challengers find it hard to zero in on a "moving target" . . . . p. 33

Salesmanship in print . . . . p. 40

INDUSTRIAL DEVELOPMENT

Agressive ID puts tires on Penn Central . . . . p. 42

Southern offers one-stop shopping for site seekers . . . . p. 45

IC Gulf is lifeline for new Illinois community . . . . p. 50

OPINION

INSIDE — Hindsight and foresight. . . . p. 5

WATCHING WASHINGTON — Retire the Retirement Fund? . . . . p. 15

LINES ON LABOR — ICG publishes a "daily" . . . . p. 16

VIEWPOINT — That's a good question, Mr. Volpe, but . . . . p. 88

COVER

Rocco Padulo of Chicago Photographers took the cover photograph featuring almost $5 million in EMD locomotives.

DEPARTMENTS

Advertising sales offices . . . . p. 87

Dividends . . . . p. 86

Industrial Traffic . . . . p. 78

New products . . . . p. 69

Market . . . . p. 83

Moving Freight. . . . p. 84

People in the News . . . . p. 74

Supply trade. . . . p. 78

Short and Significant

BART OPENING SET FOR SEPT. 11

Bay Area Rapid Transit (BART) will snip the ribbon Sept. 11 and start running trains over a 28-mile segment of line from MacArthur Station in north Oakland south to Fremont City, terminus of the Southern Alameda County ("A") Line. But "Day One" is being deliberately planned as a low-key event; BART officials are hoping that the main national focus will come when the trains can be observed under normal ridership conditions. The official dedication will take place sometime between Oct. 1 and Oct. 15; President Nixon is expected to attend.

BN, OIL COMPANIES ENTER INTO LEASES

Burlington Northern has granted coal and oil exploration permits covering 249,000 acres of BN's lands in Montana and Washington to three major oil companies. C.R. Binger, vice president-natural resources, says two coal leases with one company could return $2.5 million in bonus and minimum royalty payments over the first 20 years of the contract; income from oil exploration contracts with the other two companies can't be estimated at this point.

253 COMPUTERS IN USE ON RAILROADS

U.S. and Canadian railroads are paying $4,131,000 a month in rental fees for 253 computers, according to a report just released by the AAR's Data Systems Division. This is a 12% increase over the year-ago figure, when 250 computers were in use. Biggest users of computers are Canadian National and Penn Central, each with 22; Southern Pacific, 19; Chesapeake & Ohio/Baltimore & Ohio, 16; Burlington Northern, 14; Santa Fe, 11; Canadian Pacific, 9; Kansas City Southern, 8; Union Pacific, 7; Southern, 6; Chicago & North Western, Norfolk & Western, Quebec, North Shore & Labrador, 5 each; Milwaukee Road, Rio Grande, Missouri Pacific, 4 each; Alton & Southern, Rock Island, Louisville & Nashville, RF&P, and Seaboard Coast Line, 3 each. IBM gets 84.7% of the total rental fees.

ID ACTIVITY UP IN 1972

Two roads, Norfolk & Western and Penn Central, have reported success in the first half of 1972 for their industrial development programs. Decisions to construct 77 new plants and expand 22 existing facilities along N&W lines are expected to increase N&W revenues by $8.9 million when the 24,700 added annual carloads of traffic begin to move. J.E. Savely, assistant vice president, Industrial Real Estate Department, says N&W's ID activity has produced about double the number of new facilities compared with the same 1971 period. Penn Central estimates more than $20.8 million yearly will be added to its revenues when the $170 million in capital expenditures planned by firms for new or expanded facilities has been completed along its lines. "Many of the new plants are being built in 302 industrial parks served by PC," reports Otto W. Pongrace, director-industrial development.

RETIRED PRR PRESIDENT DIES

Walter S. Franklin, president of the Pennsylvania Railroad from 1949 to 1954, died at Northeast Harbor, Me., on Aug. 17. He was 88 and had retired as a PRR director in 1959. Prior to heading the PRR, he had been president of the Detroit, Toledo & Ironton and of the Wabash. He was president of the Long Island from 1950 to 1955 and negotiated its sale to the State of New York for $65 million.

APPRENTICESHIP CONFERENCE SCHEDULED

"Apprenticeship and Training: The Route to Skilled Employment" will be the theme of the eighth annual National Transportation Apprenticeship and Training Conference to be held at Chicago's Pick-Congress Hotel Oct. 2-5. Principal speakers will include Michael Cafferty, chairman of the Chicago Transit Authority; Frank Borman, senior vice president of Eastern Airlines; and Mrs. Helen D. Bentley, chairman of the Federal Maritime Commission. Chairman of the Conference's management division is Harold W. Wales, manager of personnel training for Burlington Northern.

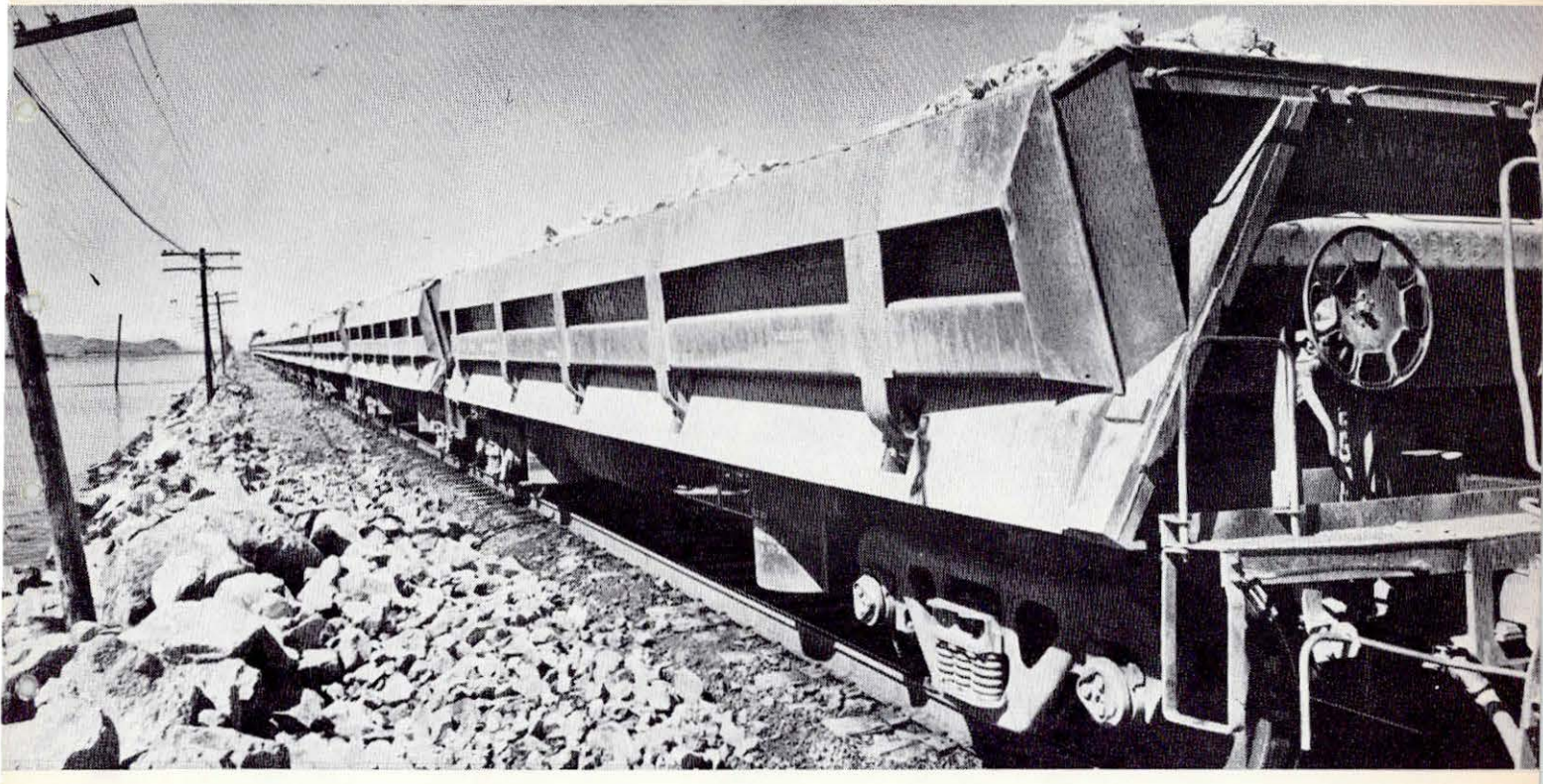
SAFETY BOARD WANTS FASTER ACTION

The National Transportation Safety Board has urged FRA to conclude its 20-month-old proposed rulemaking covering transportation of liquefied flammable gases in certain DOT-specification jumbo tank cars and to "encourage the expeditious completion" of the RPI-AAR tank car safety research project.

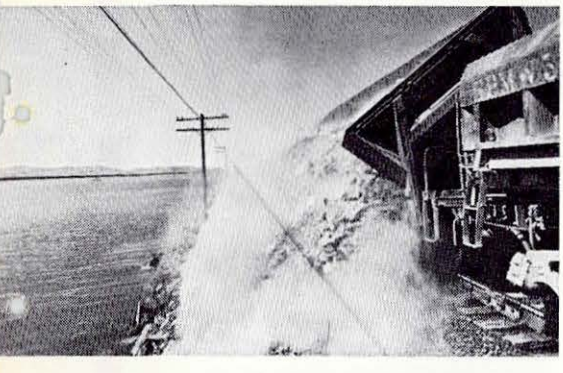
RAILROADERS HEAD FOR RUSSIA

Federal Railroad Administrator John Ingram and seven U.S. railroad officers will visit the Soviet Union Sept. 1-16. Ingram and representatives of Illinois Central Gulf, Burlington Northern, Penn Central, Southern and Southern Pacific will visit Moscow, Leningrad, Kiev, Poltzva, Rostov-on-Don, Sochi and Tblisi, USSR Transport Minister Boris Beschev recently headed a group of Soviet railroad men on an inspection visit to the U.S.

DIFCO DUMP CARS



CUT RIP-RAP COSTS



100-ton Difco air side dump cars* deliver efficiency!

Southern Pacific relies on rugged 100-ton, fifty-cu.-yd. capacity DIFCO dump cars for the toughest heavy-haulage fill jobs—like the Great Salt Lake operation shown above!

Whether it's rip-rap, gravel, dirt or slag, DIFCO stands up to the daily challenge of the heaviest fill loads to deliver increased dumping efficiency to today's modern railroads.

With less deadweight and more payload per car, DIFCO helps minimize time, labor and movement costs.

Designed for dumping to either side, DIFCO cars lift to a self-cleaning fifty degree angle in just seconds, while the automatic down-folding door assures maximum load cast for quick, clean, accurate dumping.

DIFCO air side dump cars are available in a wide range of sizes, built to provide you with DIFCO dumping efficiency whatever your heavy rail haulage requirements. Please call, wire or write your DIFCO representative today for detailed information.

*patented

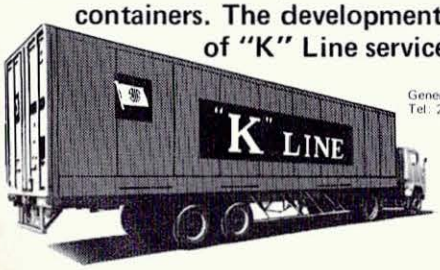
Remote Controlled DIFCO Loco Trains • DIFCO Payload Locos • Differential Air Dump Cars • "AXLESS" Truck Mine Cars • Locomotives • Rotary Car Dumpers • Wagon Trains

DIFCO, INC., FINDLAY, OHIO 45840 • PHONE 419-422-0525

Circle 5 on coupon page 69

Watch this space for an important announcement.

This September "K" Line will be announcing an important new service between Japan and New York. A fully containerized route via the Panama Canal. It'll include all the important features shippers have learned to take for granted: economical 40 footers, on-chassis capability and a wide choice of special containers. The development of this new route represents a proud addition to the already wide range of "K" Line services. And you will be hearing more from us later.



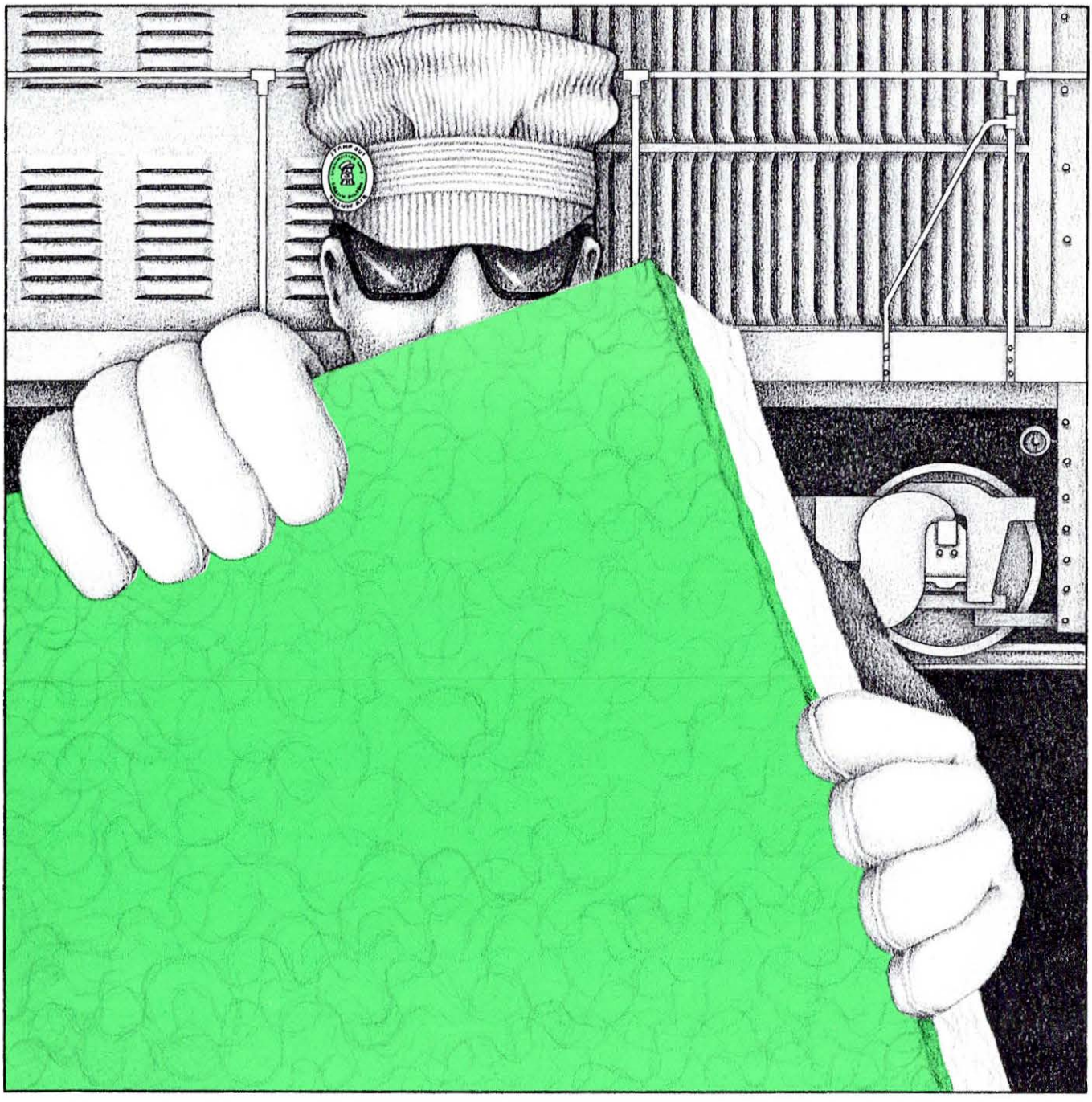
General Agent in the U.S.A. and Canada: "K" Line-Kerr Corporation, 29 Broadway, New York, N.Y.
Tel: 212-344-4800 Representative Offices: San Francisco, Los Angeles, Seattle, Chicago Agents: Kerr Steamship Co., Inc.

"K" LINE
KAWASAKI KISEN KAISHA, LTD.

Japan — New York

Circle 6 on coupon page 69

Circle 7 on coupon page 69 ▶



Keep locomotives breathing green-clean.

New DUSTGARD® Super-Filament Air Filters keep engines breathing easy. 45 miles of glass fibers per filter is one big reason. And every inch of fiber is coated with a non-toxic, noncombustible captivator to catch and hold pollutants for the life of the filter. Other major DUSTGARD advantages over mechanical filters include:

- Face is relatively open. Fibers increase in density toward the clean-air side. This improves distribution of airborne particles; delivers longer service between filter replacements.
- Completely disposable.
- Color-coded *green*-clean tint on one side assures correct installation.
- Protective polyethylene packaging helps to preserve filter effectiveness.

UNITED STATES GYPSUM
BUILDING AMERICA

Immediate shipment from stock of all standard sizes; special sizes furnished on request. See your U.S.G. Sales Engineer or mail coupon for Transportation Bulletin No. 105.

UNITED STATES GYPSUM,
101 S. Wacker Dr., Chicago, Ill. 60606,
Dept. RA-82.

☐ Have salesman call ☐ Send Bulletin No. 105

Name

Company

Address

City

State Zip

Do someone a favor!

Who? *Someone you'd like to see get ahead!*
How? By his signing up for a one year study course to update his shop craft skills. Courses available include:

1-Year Skill Improvement Program for CARMEN: safety, car details, inspection, interchange rules;

1-Year Skill Improvement Program for MACHINISTS: locomotive inspection, wheels, air brake equipment, locomotive maintenance;

1-Year Skill Improvement Program for ELECTRICIANS: wiring diagrams, electronics, locomotive electrical maintenance.

Cost is $6.00 per month for twelve months ($72.00 total). Two lessons are sent each month. We send a progress report to the railroad on request. Upon satisfactory completion of the course, a diploma is issued.

Many other training programs are available and can be tailored to meet particular needs. Coupon will bring information.

Pass this along to someone you'd like to help...

RAILWAY EDUCATIONAL BUREAU
1809 Capitol Avenue, Omaha, Nebraska 68102

☐ Please enroll me in the _____ course. Here is my check for $6.00. I will pay $6.00 per month until the course has been completed ($72.00 total). I understand I may cancel at any time.

☐ Please send me more information on the _____ course.
☐ Please tell me what other training programs are available.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

RAILROAD _____

JOB OR TITLE _____

RAILWAY EDUCATIONAL BUREAU

RAILWAY AGE
NEWS

Rail-bill backlog awaits returning Congress

The scene is now set in Congress for a slam-bang, up and down rumble on the measure regulated surface carriers have pushed for almost two years: the proposed Surface Transportation Act.

With the Senate returning Aug. 28 and the House Sept. 5 from Republican convention recesses, Congress has until about the first week of October to act on the measure. After that, Congress will adjourn to fight the election.

If Congress reconvenes after Election Day, in a brief lame-duck session, there may be an additional brief grace period enabling some form of the STA to survive.

But substantive committee action clearly must come in the next month, if STA is to get anywhere at all.

Last week two bills embodying STA were before respective House and Senate Commerce Committees, having been forwarded by subcommittees.

These were:

S. 2362. This is virtually the original STA bill—minus two provisions—which Sen. Vance Hartke (D-Ind.) introduced last year.

The absent two provisions—grade crossing aid and prohibition of discriminatory taxation—are contained in separate bills that are non-controversial, widely supported, and in fact could be the only truncated fragment of STA that survives into law this year.

Rail and allied strategists hope STA will be approved by the Senate Commerce Committee very soon after Aug. 28, with some modification aligning it with the House bill (see below). This would permit floor action by mid-month, just in time to meet:

H.R. 16281, arriving from the House. This is the revised STA version that substantially follows carrier recommendations, though a section repealing the exemption of certain agricultural productions from ICC regulation was removed by the House Transportation & Aeronautics Subcommittee in approving the bill.

In other rail or rail-relation action, Congress before recess on Aug. 18 had moved these bills:

Flood Aid to Rails. The Senate Surface Transportation Subcommittee on Aug. 10 approved a bill (S. 3843) that gives railroad victims of Hurricane Agnes $58 million in Federal loans—$18 million more than the carriers had sought. Swift approval and passage is expected, but not until after Labor Day. A similar House bill is pending. The Senate Subcommittee attached one controversial string: DOT must condition any loan on the carrier's willingness to "donate" tracks and facilities which rails don't want to repair to communities which want service restored. For such localities, the bill provides $10 million in loans for costs of repair.

—DOT Appropriations. House-Senate conferees approved a final bill appropriating $3 billion to DOT and related agencies. FRA's share: $72.7 million, including $52.5 million for high-speed research.

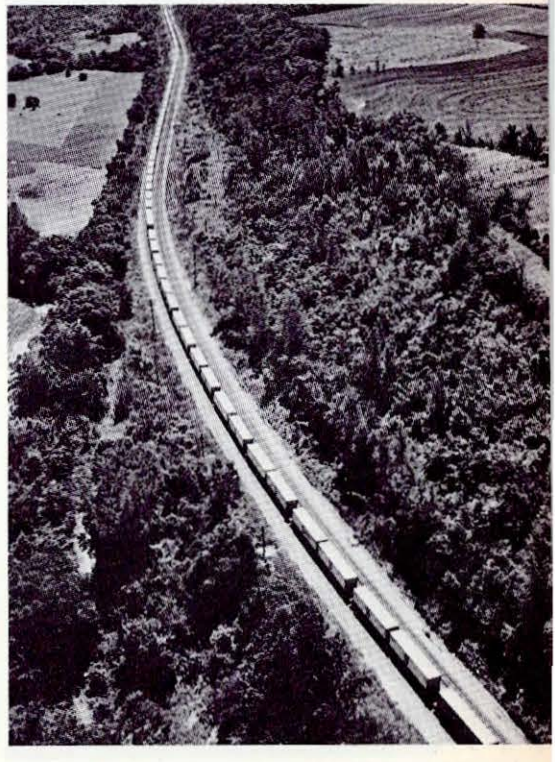
—The Senate Public Works Committee on Aug. 17 by one vote refused to open up the Highway Trust Fund to rapid transit projects, but it did allow the diversion of $300 million to-states and cities for purchase of bus systems and construction of bus lanes.

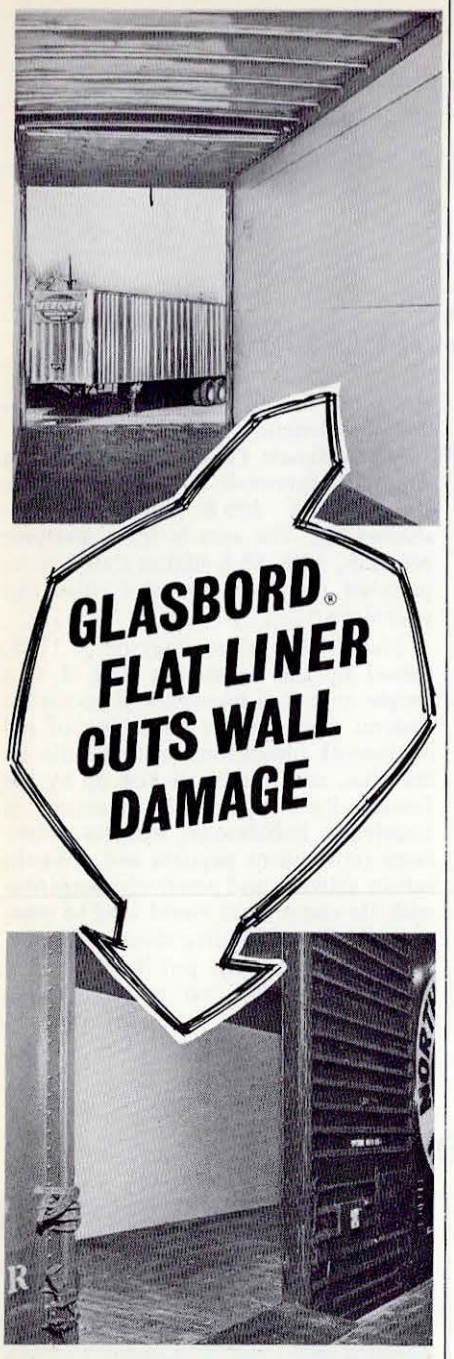
—The Senate Finance Committee on Aug. 17 approved its version of the House-passed $29.8 billion revenue sharing bill. The sum is for a five-year program, with $5.3 billion slated to be parceled out to states and cities this year alone.

Meanwhile, rail strategy on S. 1729, passed by the Senate on Aug. 4, is a simple one: It is hoped the proposal for Federal guarantee of $2 billion of rail equipment obligations will just die on the vine, and not be picked up by the House. Rails regard the measure as hopelessly hobblesome with its restrictions on divident payouts and diversification activity, and positively dangerous with its clause that could lead to creation of a Federal rolling stock authority. As one key lobbyist put it, "Even if it passes the House, no railroad would ever use it."

PC, ATSF: A bridge team

Santa Fe and Penn Central are the coast-to-coast rail carriers in what is being described as the "first large-scale operation of unit trains carrying minibridge and landbridge traffic." This is Seatrain Lines, Inc., traffic. Santa Fe and PC are handling it in 60-car unit trains, one operating weekly in each direction between Richmond and Los Angeles on the west and Weehawken, N.J. on the east, with interchange at Streator, Ill., and with a schedule contemplating five-day transit time. Traffic consists of containerized cargo moving between the Far East and the U.S. East Coast and Puerto Rico; between Europe and the West Coast; and between the East Coast and Hawaii. As Santa Fe puts it, the new service "represents the first time an ocean carrier has committed itself on a large-scale basis to the use of rail service between the two coasts rather than ocean vessels moving through the Panama Canal." It also represents come-to-fruition time for a proposal which Santa Fe has been actively pursuing for some four years (RA, May 29, p. 29).





High-strength, light-weight GLASBORD frp liner panels are best for both dry and refrigerated trailers, containers, and freight cars. The tough, hard, embossed surface resists loading and unloading damage. Full length GLASBORD panels make installation easy.

GLASBORD is accepted by U. S. D. A., Consumer & Marketing Service.

WRITE FOR BULLETIN 67B.

kemlite **KEMLITE CORPORATION**

Dept. RA • P. O. Box 429 • Joliet, Ill. 60434

Circle 9 on coupon page 69

Amtrak resuming NY-Montreal runs

Amtrak has designated a 440-mile route via the Connecticut River valley and utilizing trackage of Penn Central, Boston & Maine, and Central Vermont for resumption of passenger service between New York City and Montreal. This new international route is the second of three such services which Congress has authorized in current Amtrak subsidy legislation. Last month service was resumed via Burlington Northern between Seattle and Vancouver, B.C. Still under study by Amtrak management are trains to Mexico via Laredo, Tex. An expenditure of $2 million is specifically earmarked to underwrite these international trains.

New York-Montreal service is to resume this fall. Amtrak considered, and discarded, the idea of utilizing the Penn Central/Delaware & Hudson route via Albany, N.Y., which is 60 miles shorter and had regular passenger service until the Amtrak takeover on May 1, 1971. The New England route will serve about twice the population of the PC/D&H route through upper New York State. It will also mark resumption of passenger train operation in Vermont and New Hampshire, leaving only South Dakota, Arkansas and Maine unserved by Amtrak.

Amtrak noted that its route choice will make possible service through Penn Station in New York City. The New York-Montreal trains are to run on an overnight schedule.

Branch lines: "An obsolete concept"

Talking about the need for branch-line abandonments at a meeting of the National Feed and Grain Association may be something like taking a pro-war stance at a McGovern rally—but that didn't stop Federal Railroad Administrator John W. Ingram from making a strong pitch for rationalizing the railroad plant in comments to the association's transportation committee in Washington.

As Ingram put it, "The branch line concept has been obsolete for 40 years, the victim of motor trucks and an ever-expanding network of paved highways. The branch lines' seeming immortality is attributable to a unique combination of management inertia and regulatory obstacle. Today, many branch lines are really operating museums of 19th century transportation, paid for in 1972 dollars benefitting a very few at the cost of many."

But, he noted, the alternative to present-day operation of light-density lines isn't necessarily the total abandonment of service: "Some of our people are looking at things like branch-line ownership by entities other than railroads, or truck service to carry grain to main lines, or vehicles with both rubber and steel wheels to operate on roads or rails, or light engine carriage, or shipper crews, or container adaptation. There are innumerable alternatives and we want to explore them."

The FRA position, said Administrator Ingram, is that branch-line operations "should put themselves into an economically viable position—without asking to be subsidized by the overall national transportation system or by other transportation users."

Short Lines plan Missouri sessions

The American Short Line Railroad Association's 59th annual meeting will be held at Lake Ozark, Mo., Sept. 10-12. Some of the industry's top spokesmen have been lined up as speakers.

On Monday, Sept. 11, Frisco President Richard C. Grayson will deliver the keynote address; Donald Y. Clem, chairman of the Railway Progress Institute and president of McConway & Torley, will speak on "The Power of Grassrootism"; Richard E. Briggs, executive director of ASTRO, will discuss the role of short lines in legislative activity; J. Bruce Addington, Penn Central's vice president-operations, will give a progress report on PC entitled, "We Are Making It!", and Otto H. Zimmerman, Illinois Central Gulf's executive vice president-operations, will speak on the topic, "Railroads: Robber Barons or Robbed Bare?"

"Update" sessions are scheduled for Tuesday, Sept. 12. ACI, TRAIN and UMLER will be the subject of talks by W.H. Thompson, president of ACI Systems Corp.; R.B. Curry, the AAR's vice president-management systems, and J.J. Robinson, executive director and secretary of the AAR's Operating-Transportation Division. W.H. Dempsey, chairman of the National Railway Labor Conference, will brief ASLRA members on labor relations, and Wythe D. Quarles Jr., member of the Railroad Retirement Board, will discuss RRB developments. The banquet speaker that night will be Dr. Wilbur Schaeffer, a physicist on loan from the government to the Bendix Corp, whose topic will be "Future of Railroading in This Atomic Age."

Charlie Combes: A tribute

It is the editors who make a magazine good, or bad, or indifferent. In the Aug. 14 issue of Railway Age it was our sad duty to report the passing of an extraordinarily good editor, Charles L. Combes.

"Charlie" started his career as a helper in the Car Department of the Delaware & Hudson at Oneonta, New York, in 1930. When he left to begin his career as an editor at Simmons-Boardman in 1939, he was test engineer. Those were the days when Lenore F. Loree was president of the D&H. Charlie was very much involved with the experimental high-pressure steam locomotives that Loree believed would be the power of the future. And even though the D&H was a small road, they probably did more towards development of improved power than many of the big roads.

Charlie loved to tell about his train rides, sometimes in a special housing mounted on the footboard of these locomotives, on test runs along the winding shores of Lake Champlain. Charlie was a rail fan, but he had one dominating trait, he was stubborn. He not only denied he was a rail fan—he even denied he was stubborn. But he loved railroads and railroad men, and he loved to ride trains.

One train ride Charlie enjoyed, but I didn't, was the Broadway en route to Chicago to attend the Allied Mechanical meetings one September. Charlie insisted he was not a good gin player, but I prevailed upon him to play anyway. He relieved me of $30 between Harrisburg and Tyrone, when I begged off to go to bed.

A few months before he retired in 1968, he rode PRR's 300-car test train between Morrisville, Pa., and Harrisburg. Less than two months before he died, he and his wife, Muriel, rode the Manitou & Pikes Peak Railway while visiting the elder of their two sons in Colorado.

Charlie had been editor of the Car and Locomotive Cyclopedias since 1956. After he retired from his regular assignment on Railway Age and Railway Locomotive & Cars, he came back to edit the 1970 Cyclopedia, a "part time job" for Charlie that would have been a job and a half for anybody else, and there were few indeed who would have qualified at all.

Charlie was so stubborn he said we would never miss him when he left. Charlie was nearly always right, but not this time. We miss him mightily, and I will venture a guess our readers will really miss Charlie, too.

—Robert G. Lewis

Watching Washington

REID BEDDOW

RETIRE THE RETIREMENT FUND?

The Railroad Retirement Fund, say actuarial experts, is headed for bankruptcy—maybe by 1985 and surely by 1988 or 1989. No secret, this problem has been under study by a Congressional commission for two years. The commission will shortly send its report to Congress with no firm recommendations since there is disagreement about remedial action. Trouble is, Congress must act by June 30, 1973, when temporary increases in benefits expire. (With another 20% increase in benefits almost certain to pass Congress this year, railroad retirement benefits will have gone up a compound 51.8% in the last three years.)

The commission says that to keep the fund solvent will require an increase in annual contributions made by rails and workers to the fund—from the current 18.5% of taxable wages to 25.4%. Here argument begins.

Commission member and Burlington Northern Chairman Louis W. Menk thinks the 6.9% rate increase should be divided evenly between rails and workers or similar to the present formula for contributions. But Commission member and BRAC President Charles L. Dennis wants rails to pay all of the 6.9% rate hike plus all current employee contributions above basic social security tax rates.

Dennis's formula would shoot up railroad contributions to the fund from about $618 million this year to $1.5 billion in 1978. Dennis, moreover, asserts that "the collective bargaining process in comparable heavy industries" supports the thesis of employers paying all pension costs. A major battle in Congress next spring is thus looming. There is one way out, which may be imposed by Congress: the merger of the Railroad Retirement Fund with the social security system.

GRAIN FOR RUSSIA—AND CAR SUPPLY

AAR Car Service officials who earlier predicted no box-car shortages this harvest season are beginning to have second thoughts. Reason: Astronomical purchases by the Soviet Union of U.S. farm products. When on July 8 the U.S. Department of Agriculture announced Russia would purchase $750 million of American grains over three years, AAR's Car Service Division knew there would be a squeeze but anticipated little trouble. But on Aug. 9 USDA said Soviet purchases would total a startling $1 billion this year alone. Since then AAR Car Service Chairman William H. Van Slyke has issued four orders, the most recent on Aug. 21, sending empty 40-ft, narrow-door box cars in the direction of home roads. USDA is still being vague about which ports will move the bulk of the grains, adding to the confusion, because there are only limited storage facilities at the ports.

Car Service officials recall with shudders the year 1967 when 35,000 box cars were waiting to be unloaded at ports, virtually immobilizing the grain box-car fleet. Accordingly, AAR's Van Slyke flew to Kansas City on Aug. 22 to meet with Board of Trade, ICC, and shipper personnel to ward off any repeat of that situation.

Lines on Labor

GUS WELTY

ICG PUBLISHES A "DAILY"

It could be a mind-breaking job for the guy who has to do it. It could also be one of the most interesting ventures in employee communications to come along for quite some time. "It" is what's known on Illinois Central Gulf as the "Noon Report"—a Monday-through-Friday midday bulletin in which ICG will be attempting to keep 19,500 employees up-to-date on what's happening on their railroad and in the industry. In the context of this column, there are a couple of reasons for keeping an eye on how "Noon Report" fares: (1) In weeks and months and years past, there have been more than a few comments in this space about the need for straightforward and continuing communication between the people charged with running the enterprise and the people who actually make it run; and (2) on a more personal basis, it's a couple of Railway Age alumni who are front-and-center in the project, John Mitros, assistant vice president-corporate relations, and Frank Malone, press representative.

HELPING THE EMPLOYEE WHO WANTS TO KNOW

Why a "Noon Report"? ICG President Alan Boyd put it this way: "This represents an effort to bring employees information and happenings in which they have an interest. Too often, people have to wait for information vital to their activities and even to morale. Sometimes they get information second-hand. Sometimes they get it distorted. With the 'Noon Report,' we hope that employees who want to know can have timely, reliable information." Timely and reliable? Well, "Noon Report" began on Aug. 14—in a more-or-less test run on the Iowa Division—and the lead item on each of the bulletin's first three days was not only timely and reliable but also of vital interest: Up-to-the-minute reports on the merger legal battle (page 60).

PEOPLE WILL READ—CAN YOU KEEP THEM READING?

Are employees reading? One of the standing rules of the journalism game is: If you want to measure readership, make a mistake and see what happens. The second "Noon Report" contained a mistake, accidentally made. The third "Noon Report" corrected the second and offered this comment: "Reaction showed that somebody is tuned in."

"Noon Report" will be transmitted via MAIN and posted where it can readily be seen by employees on duty. On the former IC alone, that adds up to some 220 points and more will be tied in from the former GM&O. So transmission is no problem, posting is no problem. The format will be flexible, allowing for short takes numbering from one on up. The problem, probably, will be in sustaining interest. Into every reporter's life there come days when no news isn't good news—it's simply no news. Those are the days when even the most dedicated trivia nut would be bored stiff. To undertake a daily employee-report—well, it's a most ambitious undertaking indeed. Then again, ICG is starting at a good time, because the merger will be generating news for months to come—service and operating improvements, personnel moves and so forth.

In recent years, railroad employee communications programs, generally, have become more straightforward. ICG is shooting for frankness *and* continuity. Watching will be interesting.

BN coal market is expanding

The hauls get longer, as environment-conscious electric utilities are taking increasing tonnages of low-sulphur western coal. Two cases in point: Burlington Northern plans to originate unit trains in Wyoming for delivery to a new power plant in Texas; and the test-burning of Montana coal, also originating on BN, by the Tennessee Valley Authority at New Johnsonville, Tenn.

On the Wyoming-Texas move, 1,483 miles, BN will be dispatching three 110-car trains weekly, when Southwestern Electric Power Company's new generating plant at Avinger, Tex., starts up in 1976. On the TVA move, 1,730 miles, BN assembled four 51-car trains to give TVA 20,000 tons of Colstrip, Mont., coal for test.

BN President Robert W. Downing said the coal-to-TVA "marks the first time Montana coal has moved south of the Ohio River. We view this as additional evidence that the market for low-pollutant western coal will be an expanding one for decades." But, he said, "SWEPCO's decision to build a coal-powered station is an even more important indicator, because Texas power companies traditionally have depended on oil and natural gas. We believe this is only the first of a number of major long-term contracts for low-sulphur western coal by power companies in Texas and many other states that are not currently using this type of fuel."

Meanwhile, BN is looking for a doubling of production over the next five years for low-sulphur coal from operations in Wyoming, Montana and North Dakota. C.R. Binger, vice president-natural resources, says long-term production contracts now indicate that production in the three states will go up by an average 16% per year and will reach 40 million tons in 1976.

Montana, Wyoming and North Dakota have 56 billion tons of sub-bituminous coal which it is economical to mine now and over a trillion tons of known reserves. "The coal regions in these states apparently are destined to fill a significant role in meeting the nation's future energy demands," predicts Binger.

"Power plants currently are using about 320 million tons of coal each year," according to Binger. "Industry officials estimate that by the year 2000 the United States will be burning more than 800 million tons—and perhaps as much as a billion tons."

Currently, BN is operating 40 unit trains each week between Wyoming and Montana mines and utilities in Minnesota, Illinois and Indiana.

The Shortcut.

Now a simple Telex message instantly answers most of your CN car location questions.

When you ship CN, our Central Computer keeps track of every movement.

From over one hundred key locations across Canada and those of CN subsidiary companies in the U.S. (GTW; CV; DWP) it keeps track of car movements throughout the CN system.

And now there's a simple shortcut you can take to find out the important information it has in store for you.

Dial 05-25810 on Telex

That's our number. Then follow this procedure:

Depress in sequence: FIGS D

After getting a response, depress in sequence:

ONE SPACE X G RE-TURN LINE FEED

Type your car initials, a space, then the number.

Followed by RE-TURN LINE FEED LTRS

You can repeat that last step for up to 20 different cars.

Finally, depress in sequence:

E N D FIGS H LTRS

That's it. You'll get an immediate response.

Get a Printed Record

You get the exact location and current status of any freight car you have in transit on CN. Any time, day or night.

And you get it printed, for a permanent file record.

Want the complete booklet on how to trace cars, containers or trailers by Telex? It's yours—free—as many copies as you'd like.

CN **Distribution Systems**

R. E. Lawless
Vice-President, Freight Sales
Canadian National Railways
P.O. Box 8100, Montreal 101, Quebec

Send ____ copies of your booklet on CN Instant Tracing Service.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____ ZIP _____

CITY _____ STATE _____

Circle 10 on coupon page 69

ICC's Tuggle defends (and attacks) conglomerates

A business magazine's report that the ICC is seeking legislation to "prohibit future railroad diversification" has led Commissioner Kenneth H. Tuggle to issue a firm denial that the Commission has any such intention. At the same time Tuggle, in an Aug. 15 address before the American Bar Association's annual meeting in San Francisco, undertook to explain why the ICC is proposing legislation to extend its regulation over conglomerates.

Tuggle stated categorically that:

1. "The Interstate Commerce Commission has not concluded that diversification was the cause of Penn Central's fall."

2. "Today's Commission has not determined that diversification is necessarily bad for transportation companies, or inconsistent with the public interest in transportation."

In fact, said Tuggle, the conglomerate route has much to recommend it, and "to deny these advantages to transportation would be inequitable and short-sighted." But he urged caution. He both defended, and attacked, diversification as it has been practiced by railroad companies.

To buttress his point that Penn Central's bankruptcy is not a prima facie case against diversification, Tuggle looked at the six other northeastern roads now in reorganization: "None... is distinguished for diversification. On the other hand, New England's Bangor & Aroostook Railroad, said by some to have been victimized by a conglomerate, is not in bankruptcy. Nor are the Missouri-Kansas-Texas, the Kansas City Southern, the L&N, the Union Pacific, the Santa Fe, Southern Pacific, Illinois Central, and numerous other railroads which are conglomerate affiliates, some having been actively diversified for more than 100 years."

The fact is, said Tuggle, that "a large part of Penn Central's problem is an outgrowth and a manifestation of a basic malady affecting railroad operation throughout our northeast quadrant." The degree, if any, to which diversification may have hastened Penn Central's downfall is still a subject for study before the ICC and various committees of Congress, he emphasized.

● **There are pluses.** After listing some of the obvious benefits of diversification (freedom from regulation, tax advantages, a broadened earnings base), Tuggle examined the positive side of the picture.

"The Union Pacific Railroad was diversified almost from its inception. But in 1969, it formed a holding company with several non-transportation subsidiaries, and spun off to them various properties which historically 'belonged' to the railroad.

"In the preceding four years, when the railroad was the parent, UP had an average annual income of $105 million. In the next two years, as a subsidiary within the conglomerate, the railroad had incomes averaging $116 million.

"With Southern Pacific, Illinois Central and others, the story is the same. As a parent railroad, they enjoyed profits; but as subsidiaries in conglomerates, their profits increased.

"Recognizing that long-range trends are not yet visible, and that income statements do not tell the whole story, these successes should not be ignored," said Tuggle.

● **And minuses.** But neither, he added, should the other side of the picture be ignored.

"The Chicago & North Western Railroad created a holding company, using railroad funds for diverse investments. First a chemical company was acquired. It was an immediate success. That was followed by another chemical company, then by fabrics, steel and diverse other lines. Naturally, the railroad's resources and substantial tax credits gave the project a big boost.

"But in eight years, management became disillusioned with the long-term prospects of the railroad industry, and this year sold their railroad. As a parting shot, the conglomerate management was reported as saying that the sale of the railroad will improve the earnings quality of the holding company by eliminating from the conglomerate's picture the unpredictability of the railroad's earnings.

"In the other example, the Bangor & Aroostook Railroad put itself into a conglomerate. Railroad assets and tax credits were consumed, and after a few years, the railroad was spun off. The new owners have challenged some of the conglomerate's dealings with the railroad as its subsidiary, and have filed a suit for recovery of damages."

It all depends, says the Commissioner, on which conglomerate you are looking at.

● **What ICC wants.** So it follows, said Tuggle, that "conglomerate manipulations are not always advantageous to the carrier, or in turn, the public it serves."

Noting that carriers cannot issue securities or incur certain obligations without ICC approval, and that "by statute, the Commission prescribes reports and a uniform system of accounts, and may approve the consolidation of carrier properties subject to reasonable conditions," Tuggle went on to say:

"This entire statutory plan can be circumvented and even be subverted, by skillful employment of the conglomerate device. The holding company and the non-carrier affiliates, outside the ICC's jurisdiction, can issue securities, incur obligations and engage in intercorporate transactions which can draw upon the carrier subsidiary and encumber its ability to serve just as much as if the carrier itself were doing these things.

"If a carrier advances cash to finance an affiliate's project, or for the same purpose is forced to open a line of credit, or pay out a dividend, or make an upstream loan, the effects upon the carrier are no less serious than if the carrier issued securities of its own in the same amount.

"The important question, however, is not how much a conglomerate takes out of a carrier, but rather, how much is left in. And to pass judgment upon the latter, we should consider:

"What has been the effect upon the carrier's ability to serve the public?

"What resources are needed to meet the reasonable capital requirements of its transportation business?

"What service and capital obligations can the public reasonably impose upon the carrier?

"Based on these and other policy considerations, and recognizing that the larger carriers are turning up the conglomerate road, the ICC has proposed legislation to maintain the integrity of transport regulation.

"...The commission's bill would extend regulation over conglomerates on three basic points:

"First, when a non-carrier obtains control of a carrier. (The present law is addressed to situations involving two or more carriers.)

"Second, when a non-carrier issues securities affecting a carrier subsidiary.

"Third, when remedial steps are needed to correct conglomerate abuses likely to impair a transportation affiliate."

Concluded Tuggle: "If diversification is a lawful and advantageous way of doing business, its availability should not be denied the transportation industry, which must compete with non-regulated industries for financial and investor support. But since the nation and its entire economy are heavily dependent upon the regulated surface transportation utilities, safeguards against abuse are warranted."

Congratulations to EMD on your 50th anniversary!

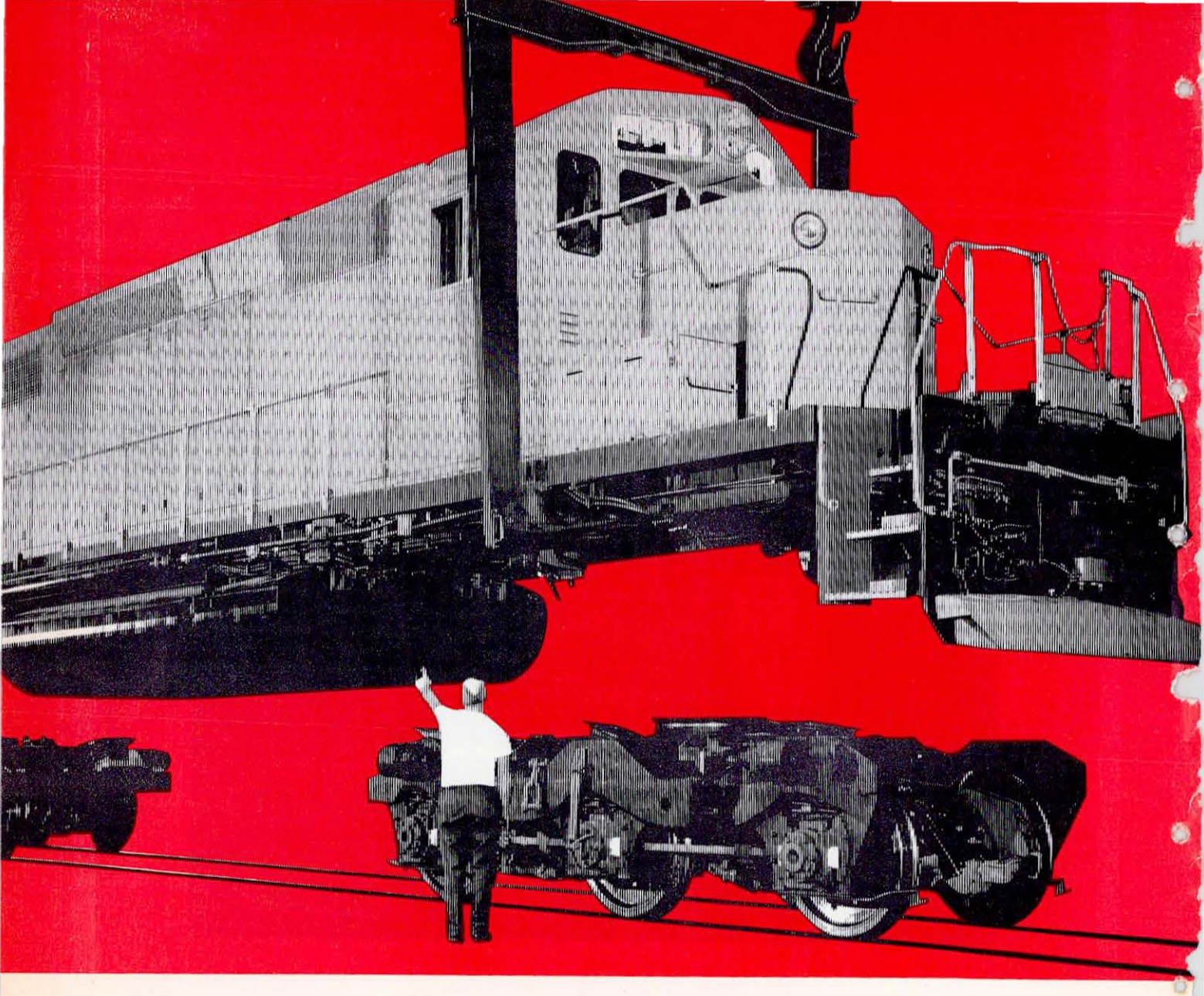
ASF is honored that our
Brakes and Extended Life® Springs
are integral parts of
EMD Locomotives.

We are proud to be a member
of such a winning team.

Best wishes,
American Steel Foundries

ONE OF THE Amsted INDUSTRIES

ASF ELECTRO-MOTIVE 50 YEARS OF POWER



GOING TOGETHER

EMD and Rockwell -teamed for progress!

From the beginning, truck frames built by our LFM-Atchison Division have carried the load for EMD's bold, new locomotives. On this, EMD's 50th anniversary (and LFM's 100th), we salute Electro Motive's unique contribution to the progress of rail transportation. We take pride in our long association . . . and in our continuing commitment to serve this vital industry—together!

Shown above: A General Motors SD40-2 is trucked at Electro-Motive. Trucks by LFM-Atchison Division, Rockwell.

ELECTRO-MOTIVE 50 YEARS OF POWER

A CENTURY OF SERVICE • LFM • ATCHISON • ROCKWELL • 1873 1972

Rockwell

LFM-ATCHISON DIVISION
Atchison, Kansas 66002

Circle 12 on coupon page 69

EMD's 50th Anniversary

The diesel revolution: Yesterday, today, tomorrow

Like most revolutions, this one didn't come quickly or easily. It was brought about by men of genius and dedication who refused to abandon an idea whose time had come. This is their story.

By GUS WELTY, Senior Editor

Take a trip on a time-machine—one that starts rather slowly but then comes on with a rush:

—It's 1922. Warren G. Harding is President. Railroads are still making a comeback from a period of government control. In Cleveland, a tiny corporation called Electro-Motive Engineering (later simply Electro-Motive) is founded. It's almost a storefront operation (and, in fact, the second employee hired, a stenographer, quits the same day apparently because she figures such a marginal outfit offers no future for an ambitious working girl). But, Electro-Motive survives and finds a reasonable market in its chosen line of work, which is engineering and selling gas-electric railcars.

—It's 1930, and the Great Depression is here. In a move that causes little stir in the railroad or financial community, General Motors buys Winton, the engine manufacturer, and its No. 1 customer, Electro-Motive.

—It's a day late in May of 1934. Farmers in the Great Plains glance up to see a silver streak flashing past. It's a slant-nosed little streamlined train, built by Budd and powered by Electro-Motive. It averages more than 77 mph on a run from Denver to Chicago. Small wonder it came to be called "Zephyr."

—It's 1937. Diesel-electric locomotives are becoming somewhat more common, but just in yard and passenger service. Still, some people see a diesel revolution coming. Among them are rail labor leaders. They negotiate the "Diesel Agreement of 1937," thereby welding the fireman into the diesel cab. Railroad management will argue long and loud that the fireman has no fires to tend. But it will be 1972 before they finally resolve the dispute.

—It's 1939, and the first heavy-duty, mainline diesel-powered freight locomotive leaves LaGrange, without fanfare, for demonstration runs on 20 major railroads.

—It's the post-World War II era and the diesel, having proved itself in wartime service, is on its way to sending steam power to the torch. There are still a few coal-hauling holdouts, but the revolution is in full swing. A number of manufacturers are vying for the business, and buying habits are varied: Some railroads, thinking of parts and maintenance problems, try to stay with a minimum number of manufacturers and models; others, in kid-in-the-candy-store fashion, order some of just about everything that's available.

—It's a new decade, the 1950s, and Electro-Motive has the locomotive configuration that will shape the future in railroad freight hauling. It's called a GP7. It's not very pretty, but it's practical for a wide range of duties.

—Suddenly it's 1965. EMD, which began selling a locomotive-replacement program about a decade earlier, now has a "second generation" of higher-horsepower diesel-electrics, turbocharged and normally-aspirated and equipped with a new engine, to take the place of aging units.

—It's 1972, and EMD launches a 50th-anniversary celebration early-on with the availability of its Dash-2 models, emphasizing reliability and heralded as the beginning of a "third generation."

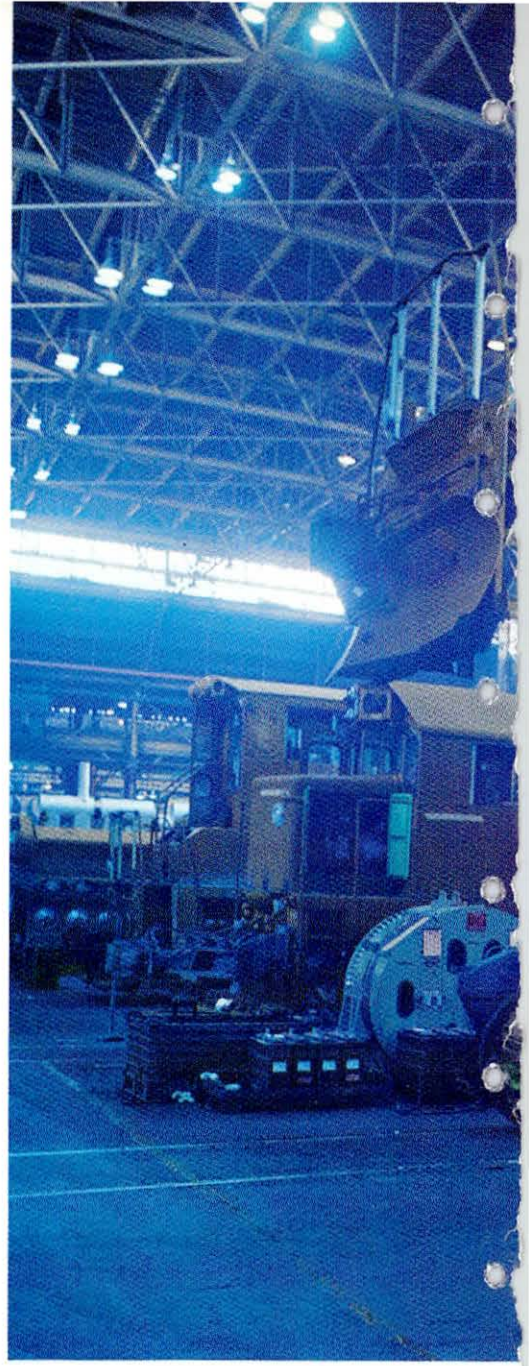
• As times change... Very little is the same today as it was 10 or 20 or more years ago, and the locomotive business is surely no exception. The respected names from the steam days no longer build motive power—Baldwin, Alco, Lima. Early competitors in dieselization—Baldwin, Alco, Lima-Hamilton, Baldwin-Lima-Hamilton and Fairbanks, Morse—no longer have production lines. Today, in the U.S., it's EMD and General Electric—and there's a certain irony in the stiff competition EMD and GE give each other: Not only were GE and Alco teamed-up in dieselization's earlier days; GE was also a contributor to Electro-Motive in its earliest days, as a builder and as a supplier of electrical components.

There are, probably, a number of ways to sum up the accomplishments of the locomotive builders generally and EMD specifically. As one veteran of the railroad and rail supply industries put it a few years ago, "They—and EMD in particular—saved the railroads."

Perhaps that's putting it a big strong. But a couple of facts remain: (1) After World War II, with railroad motive power war-worn and weary, the diesel-electric builders were ready with production capability and a viable alternative to building more steam; and (2) more than any other builder, it was EMD that brought standardization and mass-production economies to what had been a completely non-standardized business, namely the design and construction of locomotives.

• Here comes one-for-all. In the steam days, individual railroads and their mechanical departments carried individuality to an extreme. Even if you took into account certain variations in traffic patterns or terrain, it was hard to understand why you could look at a half-dozen railroads' 4-6-4s or 4-8-4s and find no two designs alike. EMD changed that—taking, in a way, a page from (of all people) Henry Ford. Ford, so the story goes, told the customer he could have his Model T in any color—so long as it was black. Electro-Motive

Dash-2 locomotives now in production at LaGrange represent third generation of Electro-Motive power



offered the customer any paint job he wanted—so long as the locomotive underneath was basically the same. To be sure, there have been exceptions: In early dieselization, one buyer demanded non-standard bearings and another required a cast underframe; in later days, EMD has turned out semi-streamlined FP hood units and extra-high-horsepower models for just a few buyers. But by and large, standardization is the rule for both EMD and GE—and no one knows for sure how much money standardization has saved the railroad industry in the past 25 or 30 years, in initial cost and in upkeep.

Statistically, the diesel-electric's contribution is rather easily shown. As just one comparison, two years after the end of World War II, railroads were operating more than 41,700 locomotives (almost 85% steam) and productivity was about 655 billion ton-miles. Last year, railroads got the job done with a few more than 27,100 units of motive power—99% diesel-electric—and the "job" was almost 740 billion ton-miles.

(Still another measure of the diesel's contribution comes not from the builders but from the U.S. Department of Health, Education and Welfare. Studies a few years ago found that from an environmental standpoint railroads were not major polluters—accounting for about one-half of 1% of total emissions and less than three-fourths of 1% of particulate matter emissions. Said HEW: "The most spectacular reduction in emissions to the atmosphere was the result of the total substitution of the diesel locomotive for the steam locomotive. Had this not occurred, total annual emissions in 1968 of CO, particulates and SO2 would each have increased by 10% or more.")

• **No easy victory.** Like most revolutions, however, the diesel revolution was not easily won. Railroads were still buying steam locomotives after World War II ended (though the order-margin was heavily in favor of the diesel-electric). And, EMD had no lack of competition from steam-builders converting to diesel (as well as from FM, which wound up ahead of its time with a high-horsepower unit before it finally tossed in the towel). The U.S. Department of Justice got into the picture at one point with an investigation of Electro-Motive and its share of the diesel-electric market. The case was eventually dismissed in Federal court.

And, railroad operating and mechanical officers, never easily satisfied, have been (simultaneously) the locomotive builders' greatest fans and severest critics—appreciating the cost/benefit contributions of the diesel-electric but always insisting on the 100% maintenance-free locomotive. At EMD, reliability has long been regarded as the prime target. And, while nobody at LaGrange would deny that there have been problems in the past, as with the first turbocharged units, just about everybody would take a certain pride in performance of the modular electrical controls in the Dash-2 line. From General Sales Manager M.H. Gardner and Chief Engineer H.L. Smith, Jr., you get a similar comment: "You could take all the modules that have failed and put them in a box—and it would be a pretty small box."

If there is a serious, or common, criticism leveled at the locomotive builders by railroad men today, however, it has to do with this subject: Reliability. But as with most debates, there are two definite sides: Railroad operating and mechanical-department officers contend that the builders are going into production with innovations inadequately tested under operating conditions; the builders, doing more testing now than ever before, are well aware that railroads want power that will run with minimal maintenance—and they figure that it is their job to produce this kind of unit. And in a way, there's more than a bit of irony in all this—particularly when you look back at EMD's history, which is dotted with more than a few cliff-hangers involving testing and reliability.

• **A sale—but. . .** Back in the gas-electric days, for instance, Electro-Motive founder Harold L. Hamilton and his mini-staff "sold" their first two units on a conditional basis—with Chicago Great Western and Northern Pacific setting performance conditions that seemed impossible to meet. Hamilton's cars met them.

Then there was the skirmishing preliminary to the 1934 Denver-Chicago "Zephyr" run. Ralph Budd, then Burlington's president, had seen GM's experimental two-cycle diesels used as stationary power plants at the 1933 Century of Progress exposition in Chicago, and Budd thought the diesel would be ideal for the little streamliner he proposed to run. GM's Charles F. Kettering demurred. He and others at GM's research lab had developed the engine—but it was untested in railroad service. Budd persevered—figuring that once GM and Kettering committed themselves they'd move heaven and earth to make the engine work. Budd prevailed, and the "Zephyr" did indeed do what it was supposed to do—but only after (1) the run was almost cancelled because of a bearing failure which was discovered the afternoon before the scheduled early-morning departure, and (2) Electro-Motive engineers had to make emergency repairs enroute after someone slammed a cabinet door on a wire and caused a

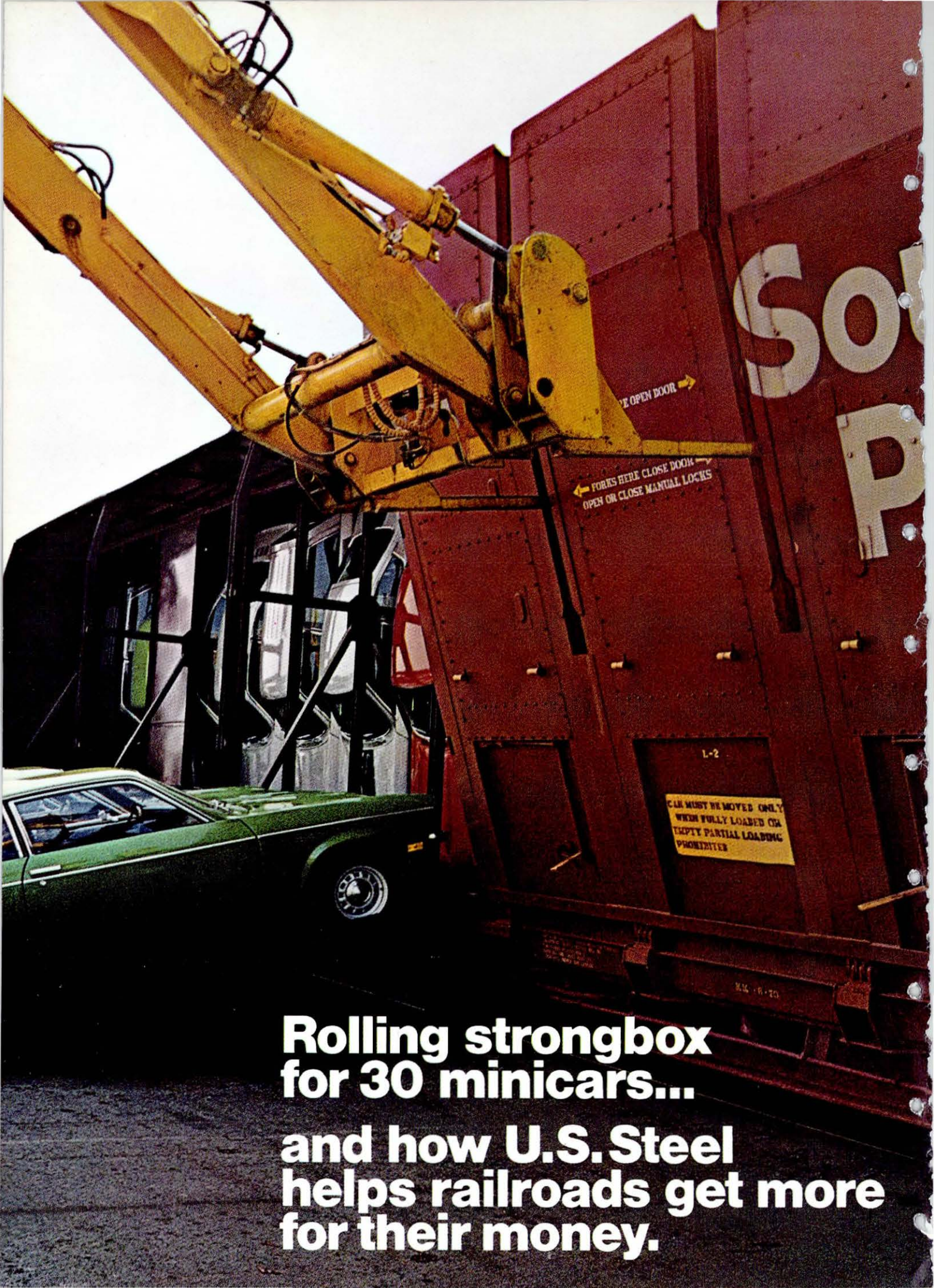
short which burned out the engine starter cable.

You might even consider the original FT demonstrator, GM 103. This was the four-unit, 5,400-hp locomotive that sold a somewhat skeptical railroad industry on the diesel-electric as a mover of freight—EMD calls it the "diesel that did it." But the 103, impressive as it was, covered just 83,000 miles over an 11-month period—and that's a far cry from the 30,000-and-more miles per month being registered by Union Pacific's DD40X units.

• **What GM 103 proved.** In a way, both the railroads' and the builders' stress on reliability probably reflects, more than anything else, the basic changes that have taken place in railroading over the past 30 or so years. When the 103 went barnstorming around the country (working on 20 railroads), operating and mechanical-department people were used to dealing with steam. Steam required attention. But the 103 ran for days at a time without its engines ever being shut down. In its 11-month shakedown, it missed not a single assignment. And, as EMD puts it, "By the time it completed these exhausting assignments under every conceivable operating condition, it had proved conclusively that it could do twice the work of a steam locomotive and at half the cost. With this four-to-one economic leverage, the fate of the steam locomotive was sealed, once and for all."

Technically, that was true. But it took a while before the successors to the 103 did that final "sealing." First, there was World War II—and while the initial and a principal task for EMD was the building of engines for LSTs and sub-chasers, government had a hand in deciding what would be the production from LaGrange, beyond military equipment. Faced with the choice in 1942 of building locomotives with "substitute and inferior metals" or suspending production, EMD suspended. Railroads protested. Finally, the Federal government ordered the required materials made available and told EMD to resume production (which EMD did, starting at a rate of one FT per day). The government directive, however, also did something else: It limited EMD to freight-locomotive production and allocated production of switching units to Alco and Baldwin. At war's end, railroads were ready to order all types of power—but freight power was clearly going to be the major market, and EMD, with its FT experience dating back to 1939, was ready to take advantage of the opportunity.

The plant at LaGrange, opened in 1936, was expanded and expanded again. And R&D provided the post-war



Rolling strongbox for 30 minicars...

and how U.S. Steel helps railroads get more for their money.

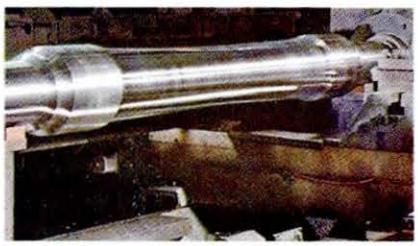
This giant freight car, Vert-a-Pac, hauls 30 little autos in scarcely more space than the usual tri-level rack car needs for 12 of standard size.

Southern Pacific and a major auto maker developed the 18-foot-high car to carry the 14-foot-long autos in a revolutionary position: nose-down on walls that also serve as loading ramps.

To cut the weight of this rolling strongbox (Vert-a-Pac is virtually vandal-proof and dirt-proof) the designers chose USS COR-TEN A Steel. This high-strength, low-alloy steel is 40 per cent stronger than carbon steel, has 5 to 8 times the resistance to atmospheric corrosion and gives twice the paint life.

It's used in the built-up center sill of the basic flat car (prime contractor: ACF Industries) and in the above-deck auto housing (subcontractor: St. Louis Car Division, General Steel Industries, Inc.). We're supplying steel—and good advice—on a lot of other projects important to the railroads: cars, rails, bridges, buildings.

If you'd like to talk, phone your USS man or write United States Steel, Box 86, Dept. 7394, Pittsburgh, Pennsylvania 15230.



New finish fights axle fatigue. As car weights and speeds go up, so does threat of axle fatigue. Our new standard finish (100-micro-inch average) fights it best. Data on request.

Stronger wheels for bigger loads. To learn how to make wrought wheels stronger, we test them on our unique inertia dynamometer: up to 30 million ft-lb of energy for a 40" wheel at 120 mph.

'61 stainless liner still tiptop. No corrosion loss; almost no adjacent galvanic corrosion: that's the verdict on these quick-emptying, hopper-floor sheets of USS Type 302 stainless steel.

USS and COR-TEN are registered trademarks.

USS **United States Steel**

market with a new unit, the F3, which boosted horsepower to 1,500 from the 1,350 in the FT.

• **Emphasis on R&D.** It would be inaccurate to say that from this point everything was downhill. But the fact remains that EMD pursued a vigorous R&D program in those post-war years to attain its dominance in the market. In 1949, production began on the F7 and the GP7—the locomotive that *really* did it, so far as today is concerned. At about the same time, EMD went into a major expansion of its network of component-rebuild and parts centers. Then, in 1954, LaGrange started turning out the GP9 and the SD9—boosting horsepower to 1,750 and offering both a four- and a six-axle unit. Locomotive replacement—later to become a big thing for EMD and for its customers—had its beginnings in the early '50s as aging lower-horsepower units began turning up at LaGrange as trade-ins on higher-horsepower hood units, on a basis that combined a good price with a good return on investment. Volume replacement began in the early '60s with the GP20.

Then came EMD's breakthrough to still-higher horsepower ratings—built around the turbocharging of the 567 engine which had been EMD's basic prime mover since 1937. It powered the 103 and everything that had come after. It had been mated with EMD-designed and -produced generators and traction motors, beginning in 1938. Now, it was a refined 567D, fitted with turbocharger and rated at significantly higher horsepower. And it had problems—which nobody, least of all EMD, would deny. Fortunately, EMD had both the plant and the people to meet the difficulties as they arose.

Introduction of the 645 engine itself, of course, was another milestone in EMD's march through the diesel "generations." It came along in 1965, as EMD began marketing its 40-series models—and it was then that Electro-Motive decided that the second generation of the diesel-electric had arrived.

• **On to No. 3.** Now, the start has been made on a third generation, just seven years after the jump from first to second. This might seem to be a modest jump, in the 40-Dash-2 line—but it's far from small. The stress is precisely where the railroads want it—on reliability.

(Meantime, there is also the possibility that EMD may expand its line beyond the locomotive. Both GM and EMD are vitally interested in movement of people, for example, and some of LaGrange's engineers have been at work on passenger-train system designs. This kind of experimentation would be nothing new for EMD. In the past, its engineers have tinkered with piggyback and with refrigeration systems. It was an EMD general manager who sparked development of the dome car.

In any survey of what has happened and what is happening in motive power, and particularly at EMD, it's easy to find a beginning—and hard to know where to stop. The whole thing began with Harold Hamilton, the former truck salesman who started out in the railroad business looking not much farther than the development of a better gas-electric. The engineering genius was Dick Dilworth, who finally left GE in 1926 to organize a true engineering department for Electro-Motive. Then there were the Ketterings, Charles F. and son Eugene, who helped to bring it all together when GM bought Winton and EMC. During and after World War II, there was Cyrus R. Osborn, brought in from GM's Allison Division to steer EMD through the war years and get it ready for the post-war boom. Keeping EMD in its position of leadership have been such men as Nelson C. Dezendorf and Richard L. Terrell and now B.B. Brownell.

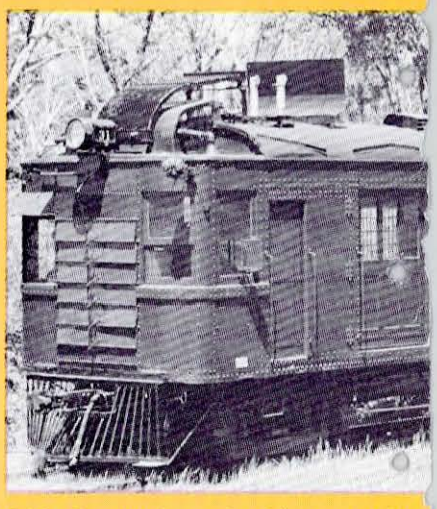
Over on the railroad side, the list of key people—men willing to gamble on the untried diesel—would be a long one indeed. High on it, however, would have to be Burlington's Ralph Budd and a man who left Burlington to make his name at Santa Fe, Fred Gurley.

Among rail suppliers, certainly such companies as GE, Westinghouse and St. Louis Car stand out as early-day collaborators with Electro-Motive. And, though it might sometimes be overlooked when a new unit leaves EMD's delivery track to go into revenue service, the diesel-electric is still a product made up of the technological contribution of scores of individual suppliers.

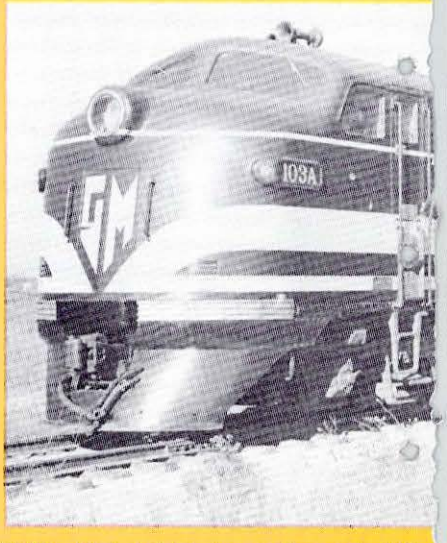
• **From the first to the newest.** As for the list of "famous" EMD locomotives, that's another long one. But historians will certainly remember that first gas-electric for CGW. . .Burlington's first "Zephyr". . .passenger demonstrators 511 and 512 and B&O No. 50. . .the FT demonstrator, 103, and the first production FT which went to Santa Fe. . .the original GP7, which Chicago & North Western acquired. . .and on and on, through the first turbocharged unit, the first of the second-generation units, the first of the Dash-2 line—and certainly not forgetting the first DD40X, which shared top billing with "modern" and ancient steam power at the 1969 Gold Spike celebration.

It has been an exciting 50 years. If it had to be summed up in briefest terms, you might look back to a basic belief of Harold Hamilton: "At all costs, we've got to keep our cars running." And you might look less far back, at a recent EMD ad that touched on both the product and the environment in which both it and the railroads should be operating: "America's railroads can bet on our Iron Horse today and in the years ahead. All she needs is a fast track and a green light."

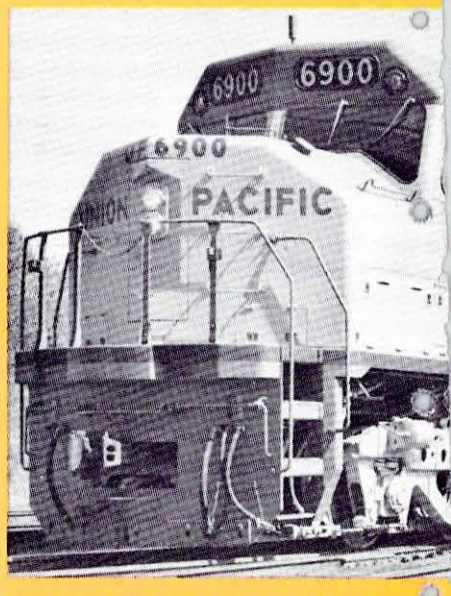
FIVE DECADES



1924: Gas-electrics assisted in controlling



1939: First freight locomotive put 567

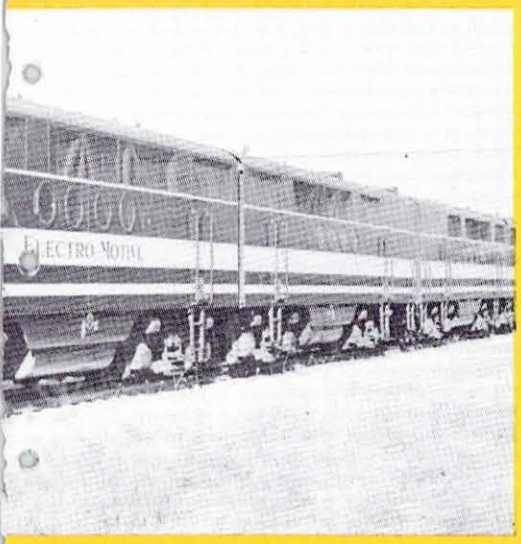


1969: DD40X road tested high ratings for

HAVE SEEN DRAMATIC EXPANSION OF CAPABILITIES

costs as branch passenger traffic sagged.

1934: Zephyr introduced "diesel" to U.S. mainline and initiated streamliner era.



engine to test in 83,000 miles of demonstrations.

1949: Utilitarian GP7 marked EMD's successful entry into road-switcher field.

pair of 645 engines under its hood.

1972: SD45-2 incorporates many features to assure reliability, maintainability.

EMD's 50th Anniversary

B. B. Brownell: "We can't see anything but

For 25 years, B.B. Brownell has been a part of the diesel revolution. A young electrical engineer in 1937, he came up through the ranks. In 1959, he was named director of engineering and research at EMD. In 1965, he became EMD's general manager and a vice president of General Motors. He's seen it all. And this is the way he looks at the diesel revolution—what it has done, what it is doing, what it can do.

"We are only just beginning to use rail transportation as it should be used."

EMD General Manager Brownell

Q. As Electro-Motive Division turns 50, what do you see down the road for the railroad industry—and for EMD itself?

A. We can't see anything but growth. The country is going to grow, and transportation requirements will grow with it. We have a magnificent rail transportation system, and it's thrilling to see the innovations that have come about in rail transportation—in really integrating the rail transportation system with the nation's industry. I think, though, that we are only just beginning to use rail transportation as it should be used. Railroads have tremendous leverage, in terms of cost and efficiency. Once there is full recognition of this, both inside and outside the industry, we should see not only a substantial absolute growth in rail traffic but an increasing share-of-market for railroads.

As for EMD, we have been saying that the industry has a replacement need for about 1,500 to 1,600 locomotive units a year. If you add a traffic-growth factor to this, as ASTRO did, you come up with an over-all requirement for about 2,000 units. Whichever figure you take, we're confident there's a continuing, large motive power market. Because of our confidence in the future growth of the U.S. railroads, we have 600 engineers continuing to improve the product, backed up by a large facilities program to increase capacity and improve product quality. We're now in the third year of this program.

Q. What trends do you see in motive-power acquisition?

A. There are, of course, a couple of basic differences in operating philosophy—for instance, light trains at high speeds vs heavy trains at lower speeds. So, the specific requirements will continue to vary. But we see three distinct motive power markets today on the American railroads:

First, for round-the-clock yard switching work, there is an increasing need for 1,500-horsepower units.

Second, there is a continuing and growing market today for locomotives to handle three secondary services—local, branch-line and switching. Here the need is for medium horsepower and to serve this market, we have modern, 2,000-horsepower, four-axle locomotives.

Third, there is a continuing market for high horsepower, broad range motive power to handle the assignments in mainline operation.

Q. EMD went into the first phase of the "third generation" of diesel-electric power earlier this year. What is this going to mean in terms of tomorrow's power?

A. In this first phase, what we have done is to take the power level at the top of the second generation and add to that everything we know about in-

growth—for railroads and for EMD"

creased reliability—and maintainability—which, of course, enhances the economic value of the unit by increasing its availability. As we have done this, we have also laid the groundwork for another, higher level of power. As you know, we have 4,200-hp units running experimentally. We have the engine, the generator, the traction motor. In short, the system for higher-horsepower.

Q. You've often referred to the diesel-electric as a "moving target" in terms of the improvements made to it by the builders. Recently, though, there does seem to be a growing interest in railroad electrification. . .

A. Understand one thing: We at EMD are in the motive-power business. We plan to stay in that business. And I can assure you that if the railroads want electric locomotives, we'll be building electric locomotives. We've participated in electrification studies, and we've entered into an agreement with ASEA of Sweden which will add to our capability in entering the electric-locomotive market, should such a market become a reality. But we also have to remember that electrification has been studied and studied—and the economic equation has just not come out right. One reason is the progress in development of the diesel-electric in the past decade, which has widened the economic gap between the diesel-electric and the electric locomotive and pushed the equation further out of balance.

In the second generation of diesel-electric power, we began replacing two old units with one new one. We have improved reliability. We have reduced maintenance cost per horsepower substantially. We have done these things with one thought in mind—to make the locomotive more economically valuable to the railroad—and that, of course, makes it a moving target for electrification, or any other form of motive power.

Q. EMD itself has taken a few R&D shots at the diesel-electric. . .

A. We've been through quite a few experiments. All of our engineers aren't working on the diesel-electric alone, because we know that we're going to prosper only as we're able to make a continuing contribution to the industry we serve.

One of the pressures we felt early-on involved the question of fuel—cost, availability, quality. Our engine does require a good quality of fuel, and so we started looking around to see what we could do with lower-quality fuel. And we began looking hard at the free-piston engine—because with its very high compression ratio, it had the ability to digest low-quality fuel. We ran a substantial development program on a French-design engine—at a cost of several million dollars—and we finally got far enough along to give it a try. We built an engine that would develop about 2,000 hp and we put it in a locomotive.

But while were doing this, we were also engaged in a substantial R&D program on turbocharging our two-cycle diesel engine. We made the breakthrough. We were able to reduce fuel consumption at the same time we increased power—taking the 16-cylinder engine up from 1,800 hp to 3,000 hp. At this time, the unit with the free-piston engine was sitting outside the shop. We never ran it. On an economic basis, we knew that against the turbocharged diesel, it wasn't even a close second-best.

Q. The Stirling engine came next?

A. This was another development program related to the fuel problem. The Stirling engine is a heat engine—an external-combustion engine—which means that you could burn almost any kind of fuel at some external point and merely transfer the heat to the engine itself. This had a number of attractive possibilities, in addition to the possibilities it opened up for fueling with coal or propane. It would be a very quiet engine. Internally, it would be contamination-free. It would be extremely reliable, almost foolproof in operation. It had the potential for matching the thermal efficiency of the diesel. So, we spent a lot of time and money on a dual development program—on the engine itself and on the heat source. We came up with a highly efficient heat-storage vessel—in effect, we had a big Thermos bottle riding along much the same way as a coal or oil tender tagged along with a steam locomotive. But the transfer of heat at such a high level posed serious problems. So did the sealing of the engine itself. We actually built several rather big Stirling engines. The efficiency factor held up. But the sealing problem was complex. Cost kept climbing, in comparison to the cost of the diesel. Our target by this time was the turbocharged two-cycle diesel—and we finally came to the conclusion that we couldn't knock it out of the box with the Stirling engine.

Q. EMD also did major research on turbines. . .

A. We did—and this research is continuing. We felt that there had been a lot of misinformation and misunderstanding about turbine power—so we decided to do it right: We decided to call upon every bit of turbine technology we could find, much of it within General Motors, to help us design and build a turbine specifically to meet railroad requirements. We spent a few million dollars on this project, too—and again, our target was the diesel.

A big problem with a turbine, at the outset, is its idling fuel consumption—which runs to 30% or 35% of full-load fuel consumption. We reduced this. We never quite matched the diesel, but we came close. What we wound up with was a 6,000-hp engine. It's pretty big and it's pretty expensive. Thus far, we have not been able to make the turbine competitive with the diesel in economic terms. We've never actually put it in a locomotive. But so far as I know, we do have the only gas turbine that's been designed specifically to do the railroad job and to compete with the modern diesel-electric. And as a matter of fact, we have not given up on it. We're going to continue to work on it.

Q. What about the R&D under way at GM and EMD in the area of passenger service?

A. GM is in the business of transportation. At the General Motors Research Center, in particular, we have been doing substantial amounts of work in the area of people-movers and, in fact, in all areas of passenger transportation. Here at EMD, we have been looking closely at what might be done with the technology available today—and it's

considerable. For instance, we have made presentations on the marriage of the bus and the railroad—a system where you would collect people by bus and move them to and from the center-city by rail. We've made detailed studies of the Northeast Corridor and other corridors. We've identified about a dozen and a half corridors—corridor in this case being defined as a route between two major points of commerce 250 to 300 miles apart.

Q. How about the technology, as applied to these corridor studies?

A. The equipment technology is no real problem. We've designed a turbine train and a diesel-electric train—we call them Turbolex and Dieselex—which could be mass-produced, which would provide the desired 100-mph speed and which would include every modern feature now available in terms of speed, ride quality, comfort, safety.

We have also taken a close look at individually-propelled vehicles—which would perhaps best be bi-modal, in that they would be capable of running under their own power, possibly as turbine-electrics, or of running off third-rail as straight electrics. These units might do the corridor job, but they primarily would be used in suburban/commuter service.

Make no mistake. The technology is available to do a lot of great things, from an equipment standpoint. The problem is two-fold. First, there's the need for improvement in the fixed plant, elimination of grade crossings and so forth—and I would guess that in any real expansion of high-speed passenger service you're looking at an expenditure of four or five dollars in plant improvement for every dollar you spend on equipment. Second, there is the problem of finding the money.

There have been a lot of concepts proposed—from the railway supply business, people in the aerospace industry and people in other industries. We may be reaching the point where we will have to produce prototypes and say "Here they are, this is what they will do. Do you want them?"

Q. In this area there are, of course, the inevitable omparisons with foreign railroads. . .

A. Yes, there are. But look, for instance, at the so-called bullet-trains on the New Tokaido Line. There are no technological breakthroughs on the trains themselves. The big contribution there was in civil engineering—specifically in tunnel-boring. The Japanese simply decided that they had to have a point-to-point high-speed route—and, at whatever cost, they simply ran through everything in their path.

"We had a conviction diesel locomotives. . .

. . .could be made to work well for U.S. railroads.

Some day we may be building some other type of power."

Q. Which leads to the question of nationalized railroads. . .

A. If the decision to nationalize is ever made—and we fervently hope it is not—it will only add a huge burden to the already-over-burdened taxpayer.

What we want to see instead is the unleashing of great innovative forces in the railroad industry. We see some of this now—in such areas as development of unit-trains, piggyback and containerization.

Q. And the locomotive builder's part in this. . .

A. We believe that the diesel-electric locomotive has made a major contribution to the industry and to its continuation as a part of the free-enterprise system. In all the years I've been associated with Electro-Motive, we have had a single objective—to produce the kind of product that would succeed in the marketplace because it helped our customer succeed in his marketplace.

We didn't invent the diesel engine. But we did have something that nobody else had to the extent that we had it—and that was the conviction that the diesel-electric locomotive could be made to work, and work well, for the American railroads. Someday, we may wind up building electric locomotives or some other form of motive power. But the target will still be the same—the enhancement of the railroads' capability and their economic position.

We and the railroads have already come a long way. When we look back, I like to compare 1951 and 1966, because these years give us a good look at first- and second-generation power. In 1951, EMD built about 2,400 units totaling 3.5 million horsepower. In 1966, we also built 3.5 million horsepower—but in only 1,200 units. For the same total horsepower, railroads paid $80 million less in 1966 than they did in 1951. Back in '51, we thought it was quite an accomplishment to turn out a locomotive at $104 per horsepower. Now, in spite of all the increases in labor and material costs, we're producing locomotives for $80 per horsepower—and in our replacement program we're getting down as low as $65 per horsepower.

It may be hard to believe, but return-on-investment for the railroads generally was higher when the second generation of diesel-electrics replaced the first generation than when the first generation replaced steam power. For one thing, in the steam-to-diesel transition, most roads went through a long period when they were operating part-steam and part-diesel and it took a while to get rid of the costs of operating steam-related facilities. But when the second generation of diesel-electrics came in, they had the potential for replacing the first generation on a one-for-two basis. Railroads could run fewer units, with higher availability and reduced maintenance cost. Our estimate is that operating costs of units built in 1966 ran $25 million to $30 million per year under operating costs of units built in 1951.

And this is precisely what we're going to try to do with our third-generation power—that is, to provide a better return-on-investment in this changeover than in the change from first- to second-generation. We think we can do it.

SUPERIOR CAR DOORS
Re-engineered for the 70's.

We've completely re-designed our full line. Advanced technical improvements have been incorporated in all Superior single and double SLIDING doors, lever or leverless single and double PLUG doors. Result: better, smoother operation and increased longevity for all Superior doors.

Check into the all-new Superior line. Call our Director of Marketing, Bud Veague, at (312) 523-0800. He'll give you the inside story on how the best car doors in the business just got better.

SUPERIOR FREIGHT CAR DOORS
Chicago Railway Equipment Company
Manufacturers of CRECO Brake Beams
1928 W. 46th Street, Chicago, Ill. 60609
Telephone (312) 523-0800

AN EVANS PRODUCTS COMPANY

Circle 13 on coupon page 69

CMOs look at today's motive power

Joe G. Moore, the Southern System's assistant vice president-mechanical, credits "complete acceptance of this technological advancement [the diesel-electric locomotive] with enabling Southern to maintain its present position in the highly competitive transportation industry." He recalls how No. 103, EMD's first diesel-electric freight locomotive, made its first trip on the Southern in August 1940: "This four-unit diesel freight locomotive pulled a 4,000-ton train over the CNO&TP from Danville, Ky. to Oakdale, Tenn., in one hour's less time than a 5,000-hp (potential) 27- x 32-inch Mikado steam engine which could only handle a 1,750-ton train over the ruling grades of this district." Noting that it would have taken three Mikado-powered trains to do what one powered by the 5,400-hp diesel did, he adds: ". . .it can be readily understood why the impact of the EMD diesel freight development resulted in the mass replacement of steam engines."

Looking back over the 32 years since the first diesel freight locomotive appeared on Santa Fe property, H.N. Chastain, chief mechanical officer, notes that, depending upon the individual point of view, the diesel-electric is in its "fifth or sixth generation" of development. Since the beginning, there seems to have been an almost constant search for more power and, therefore, "each successive model has become more sophisticated." The F7, F9 and their GP counterparts introduced in the 1940s and '50s are members of the second generation, Chastain figures. They performed reliable service and, as a matter of fact, Santa Fe has a program of rebuilding F7 cab units into general purpose locomotives.

T.P. Hackney, Jr., Chesapeake & Ohio/Baltimore & Ohio's general manager-mechanical, rates the introduction in 1950 of the multiple-purpose (GP) configuration as "perhaps the most significant phase in the evolution of the diesel-electric locomotive." This more-or-less signaled the kickoff of the race for higher horsepower and increased tractive effort. He singled out GE's U25B and EMD's GP30 as the units that initiated this trend, with EMD's 35, 40 and 45 series and GE's U30 and 36 series providing the follow-up in the high horsepower trend.

● **The present.** "One of the railroads' most urgent concerns," continues Hackney, "is the demand for improved reliability and a more easily maintained locomotive." He allows as how considerable progress has been made in certain component areas of the locomotive—like today's alternator, which has eliminated the need to field shunt the traction motors—but the traction motors still represent "the area in the most need of immediate improvement."

MoPac's J.G. German, assistant vice president-engineering, sees the new power of the '70s as something that "can not only pull like a mule but can run like a race horse." It's got all the best features of the 4- and 6-axle models of the '60s, and has become extremely popular from an operating standpoint. This doesn't mean, at least from a mechanical standpoint, German contends, that everything is ideal. Higher horsepower means, for example, that there's a greater requirement for precision control of power output. He adds that "the goal of reliability, longivity and, most important, designs that can be understood and serviced by the average maintenance man in the field is yet to be fully reached." The modular concept in today's locomotive control system is, however, a "step toward that goal."

F.A. Upton, chief mechanical officer at Milwaukee Road and current chairman of the general committee of the Association of American Railroads' Mechanical Division, notes that the diesel locomotive's horsepower has been developed to a higher level in 50 years than the steam locomotive's in 100 years. Nevertheless, problems exist with diesel power that need to be overcome. Wheel service life, water and oil contamination in both engines and traction motors, crankcase cracks, and oil and air filtration are, in Upton's opinion, areas in which improvements could be made in existing designs. He also suggests "a positive, rapid approach to trouble-shooting" as a solution to the problem of too much maintenance time spent locating and identifying diesel locomotive malfunctions prior to the actual fixing.

Improvements made by builders in the diesel engine over the years have frequently put considerable strain on the electrical systems. But, notes Santa Fe's Chastain, a new 1972 model features improved traction motors with the built-in capacity to withstand a 10% higher current flow, resulting in higher tonnage ratings. "In this instance," he adds, "the questionable factor is whether the diesel engine itself will withstand the load demand and continue to perform satisfactorily and with acceptable reliability."

● **The future.** Reliability and maintainability should continue to be builder goals in the years ahead, mechanical officers feel. Ecology will have to get prime consideration, too. Frank Acord, Union Pacific's chief mechanical officer, rates standardization as a key objective. "We must strive for a national standard for road freight motive power," he contends. Among the areas that should be considered are the operator's cab, trainline wiring, wheel specifications, brake pipe pressures and fueling receptacles. There are all kinds of advantages to be gained through standardization, he says. Standardization of electrical control systems, for example, will "provide uniform knowledge between railroads in solving trouble-shooting problems."

Repair and maintenance simplification should be a major goal for the builders, contends Frank Upton. Modernization and unit flexibility of locomotive designs should be given important consideration, too, he adds.

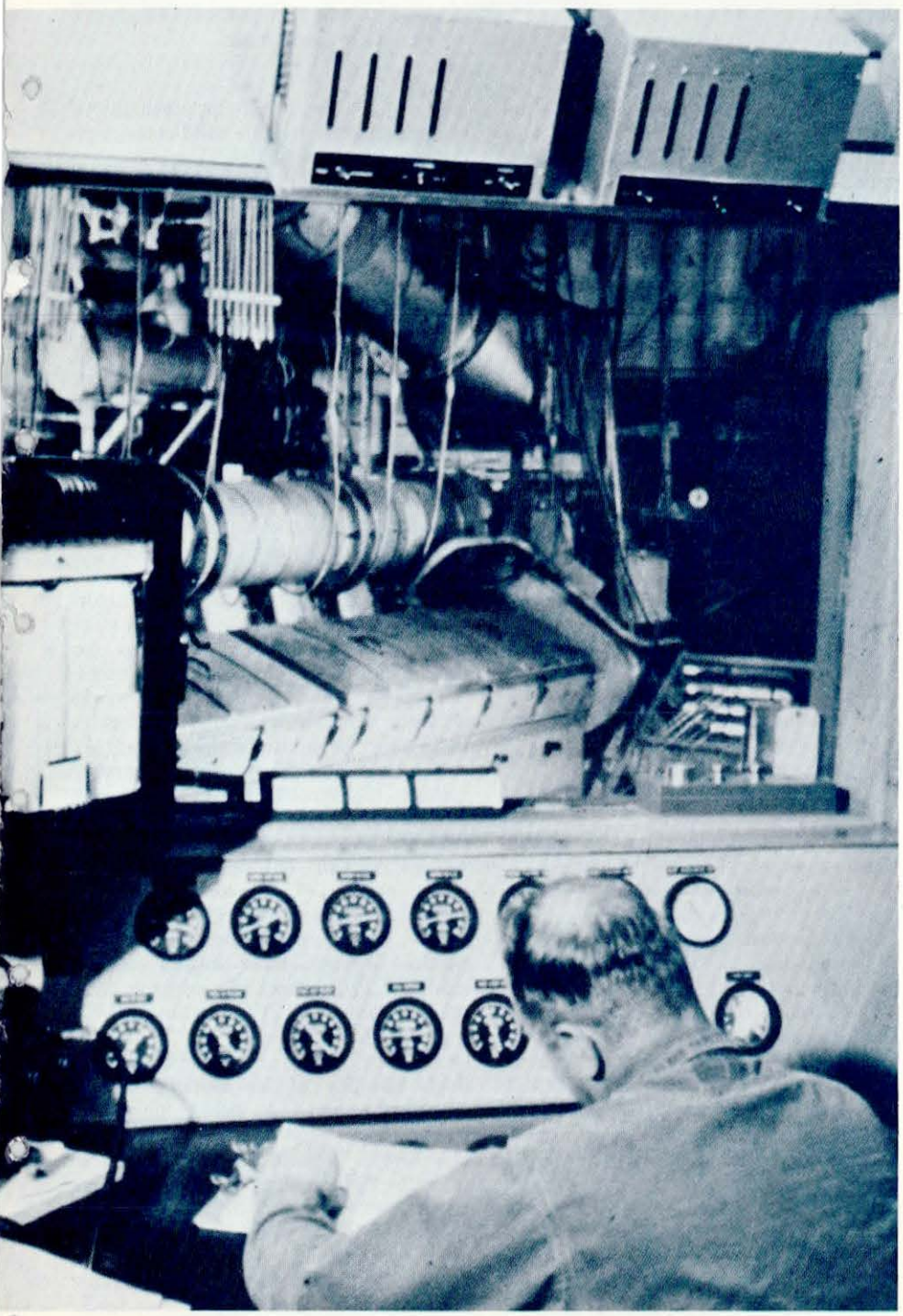
Henry Chastain, John German and Tom Hackney have almost identical comments about the impact ecology must surely have upon locomotive developments of the future. To be contended with, says German, "is the pressure of the ecologists' demands that we keep on improving and finding better ways to get the most out of the power that we buy and use." "A major consideration in the future design of the diesel engine," adds Hackney, "is solution to the growing ecological demands, including reductions in harmful exhaust emissions, oil and liquid drainage and reduction of noise pollution." "Ecology must be reckoned with a planning future motive power," says Chastain. "Pollution of the atmosphere from diesel engine emissions is but one consideration. Railroads are finding it extremely difficult to meet the various state regulations." Engine exhaust sparks and noise—inside the cab as well as outside—are just a couple of the problems that locomotive builders must resolve in the future.

Casting a glance into the future, German sees a possible contender appearing. "It appears," he says, "that within the next 10 years there will be a new growth in electrification for certain high-density traffic areas." Chastain thinks that maybe some of the diesel's deficiencies created by higher horsepower demands, coupled with the diminishing supply and spiraling cost of diesel fuel plus the environmental considerations, are "factors to be considered in planning for future motive-power requirements. It may well be that we have reached the point where the diesel engine may no longer be the ideal prime mover."

The diesel has done a lot for the railroads. It has had growing pains. It has met and overcome a number of problems. And it still has problems. "Nevertheless, the diesel-electric will still remain the backbone of the railroad motive power fleet. . .for another 20 years," predicts John German.

EMD's 50th Anniversary

Diesel technology: Challengers find it hard to zero in on a "moving target"



ENGINE TEST CELLS at LaGrange subject new designs to grueling loads.

By ROBERT D. BARTLEY, Associate Editor

Since it deposed the steam-powered locomotive as ruler of the rails in the late '40s, the diesel-electric locomotive has not been without challengers of its own. The gas turbine, for example, has come along in several forms to try its hand at unseating the diesel-electric unit. Fuel cells have been mentioned on occasion as likely successors to the diesel. Atomic energy has been championed by some as the crown-prince-of-muscle for the railroads of the future. And then, of course, there's electrification, with the current-carrying third rail or a catenary system taking the place of the diesel.

Unlike the steam engine of the '40s, though, which seemed to crumble before the awesome technological blitzkrieg mounted by the developers of the diesel-electric, today's ruler of the rails has been more than a match for its host of challengers. Furthermore, engineers and technicians in the employ of the nation's locomotive builders are seeing to it that the diesel-electric locomotive is strong, trim and ready at all times to take on any and all challengers.

The 600-man engineering staff at the Electro-Motive Division of General Motors, in LaGrange, Ill., is one of the reasons the diesel-electric holds such a commanding lead over other power sources. "This engineering staff of ours is dedicated to making the diesel-electric unit a 'moving target'," says B.B. Brownell, vice president of GM and general manager of EMD. "We're constantly improving the diesel-electric locomotive, and in doing so we're not helping the gas turbine or the straight electric one bit in catching up with it."

● **Today's target.** In its Golden Anniversary year, EMD is embarking upon a program aimed at giving its full range of motive power units even greater operating reliability and easier maintainability than was ever attainable before. The reliability/maintainability theme has, in fact, ushered in what EMD regards as the third generation of diesel-electric locomotives, and it is expected that this theme will serve as the guiding

EMD has worked closely with its suppliers

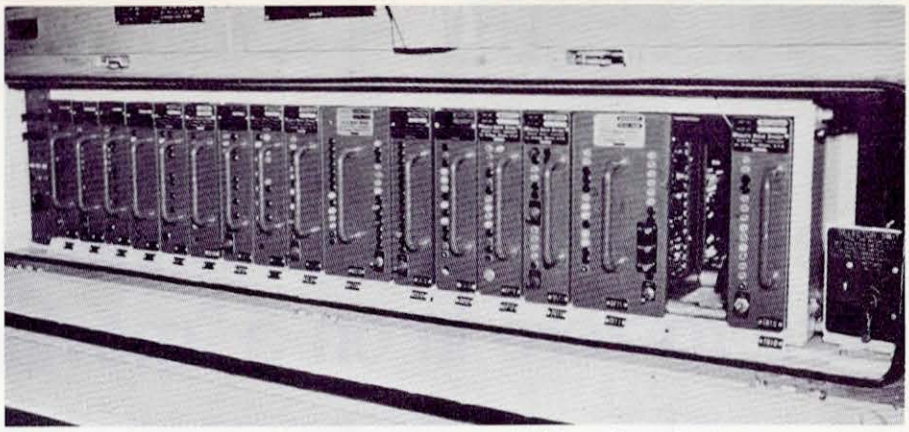
light for the vast majority of the 500 or so developmental projects EMD engineers are working on today.

EMD engineers left no doubts in anyone's mind about what their goals were throughout the just-ended second generation of motive power development. They were searching for sources of increased power, and ultimately railroads were able to place in service such motive power units as SD and GP40s, SD and GP38s, and SD45s, with horsepower ratings up to 3,600 hp. In 1969, the railroad industry's Gold Spike Contennial year, EMD introduced the huge DD40X, a 6,600-hp monster with eight motors and axles, and a fuel tank with a capacity greater than that of some of the tank cars operating on the rails today. Throughout the seven-year period of the second generation, it was easy to see that size and power were dominating the drawing boards.

Conversely, many of the reliability-inspired improvements that are standards in the Dash-2 units introduced earlier this year can't be readily seen. The same is apt to be true of many future developments for third-generation motive power. Yet, while many of the new features in the Dash-2 units can't be seen—and others that will surely come along in the years ahead could also easily be buried out of sight deep within the mechanisms of the diesel-electric unit—there's no question but what they'll be felt. Railroads will feel the benefits of these features in their pocketbooks when maintenance costs dwindle, and in the marketplace when improved, more reliable service attracts more business.

● **Where the benefits are.** When the new series was introduced at the outset of this year, EMD could point to 27 improvements that had been made in the engine, the electrical control and electrical rotating systems and elsewhere on and in the locomotive. Actually, some of these new features began appearing in some of the units built in 1971. But, as H.L. "Pete" Smith, Jr., EMD's chief engineer, explains, "All of these improvements weren't developed at one time, and we felt that they were so important that we couldn't just sit on them until the Dash-2 series was officially announced this year. So, as they proved themselves, we put them on the 1971 models."

Smith goes on to say that each of the improvements made in the Dash-2 units seems to be receiving "widespread acceptance" among customers. The new cabs, with their special barrier-type insulation consisting of two layers of flexible polyurethane encasing a dense intermediate material, have better temperature control and a much lower noise level and are getting excellent ratings



MODULAR CONTROLS were designed to give new reliability to Dash-2 units.

from the railroads. Also getting an A-plus rating, Smith adds, is the new high adhesion HT-C (HT, for High Traction; C, for 3-axle) truck.

Other improvements are:

In the electrical control system,
—Modular controls.
—Module tester.
—Power contactors.
—Motor operated transfer switch.
—Dynamic brake modification.
—Annunciator.
—Extended range dynamic brake.

In the engine,
—Power assembly changes.
—Stainless steel piston rings.
—Oil separator and eductor tube.
—Main bearings.
—Harmonic balancer.
—Auxiliary generator drive.
—Turbocharger.

In the electrical rotating system,
—AR-10 rotor wedges.
—Traction motor brushholder.
—Teflon covered string bands.
—Traction motor grease seal.
—Pinion end bearing.
—Traction motor pinion gear.

In the locomotive generally,
—Improved radiator cores.
—Traction motor and generator blower assembly.
—High capacity draft gear.
—Nylatron pedestal liners.
—JEM journal box.

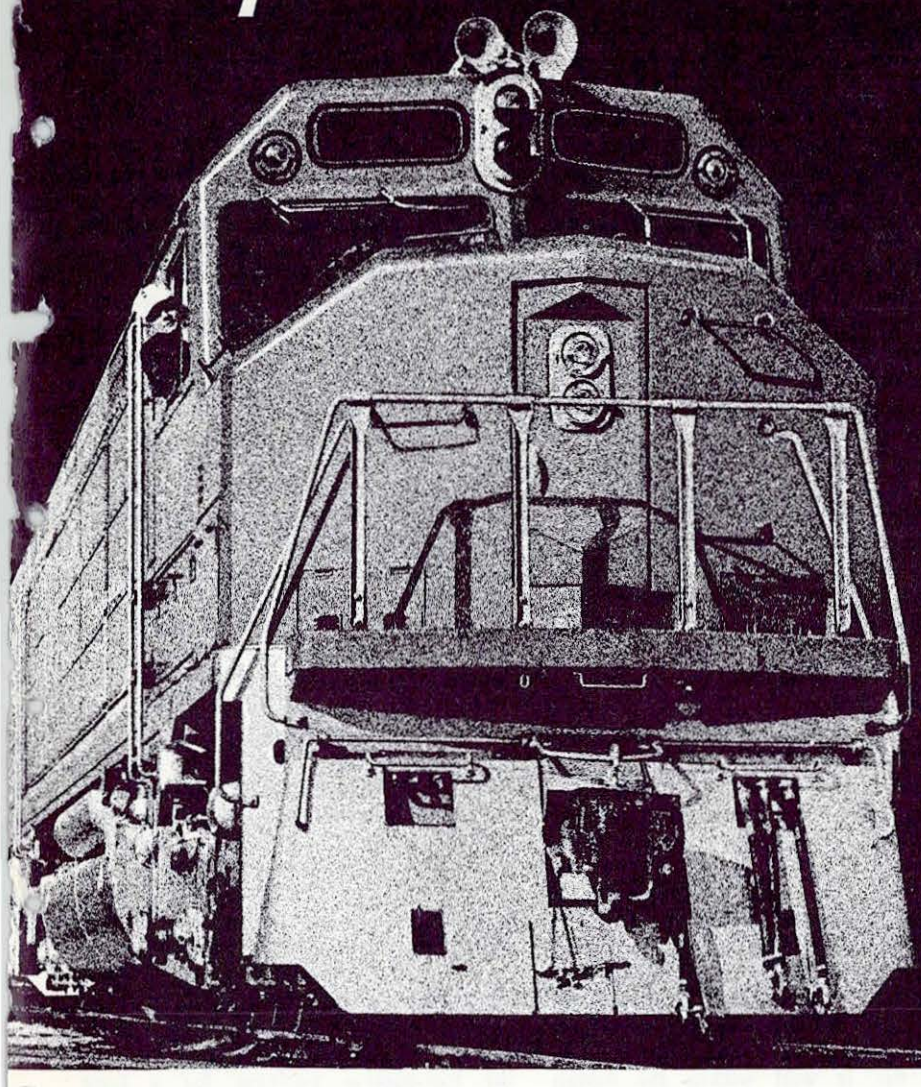
● **Modularization.** There seems to be no doubt but what the modularizing of the numerous electrical controls in the Dash-2 diesel-electric locomotive has to rate as one of the major achievements of all times by EMD engineers. Dash-2 units can have as many as 17 different control circuits in module form. Smith is quick to point out that, while EMD engineers carried out much of the module development work on their own, the A/C Electronics Division of GM made major contributions. "A/C has had a lot of experience with guidance systems for aerospace projects," Smith adds, "so engineers there were able to give us a lot of help, especially in the selection of reliable solid-state components for the modules."

Experimental work with modules actually began back in 1968, explains Smith, and appeared for the first time in the 6,600-hp Centennial units the following year. "We started out using hard wire rather than printed circuits," advises Smith, "but we quickly converted over because of the greater reliability of the printed circuit." He gives a lot of credit to the printed circuit for making it possible for EMD to establish a goal of "only one module failure out of 16 installed in a unit in a six-year period." And, despite the relative newness of modularity, this goal is not too far from being achieved, he adds.

Although a Dash-2 series unit could have as high as 17 of the plug-in solid-state modules mounted in its electrical cabinet, only 13 of them are considered basic. The extra four come into play when dynamic braking is ordered. The basic electrical circuits that have been modularized are: (1) voltage regulator for auxiliary generator voltage; (2) throttle response; (3) rate control for excitation voltage; (4) generator-excitation control; (5) generator voltage control; (6) sensor control of gating pulses; (7) sensor bypass; (8) performance control; (9) excitation limiter, a backup for the generator-excitation and generator voltage control modules; (10) wheel slip control; (11) sanding control; (12) transition control, and (13) annunciator.

● **A "real blessing."** It's difficult to single out any of the modules in the electrical cabinet as being more important than any of the others. But, says Smith, reports have filtered back from the field saying that the annunciator module is a real blessing. A basic four-point problem-area detector that monitors certain vital electrical and mechanical functions, this AN module takes a lot of guesswork out of locomotive maintenance. It used to be that

What's Vapor doing for your locomotives?



Alertor

Speed-Log

Pace Setter

Fuel Oil Heater

Automatic Ground Reset Limiter

New-Matic Toilet

Well, first there's the **Alertor** our safe electronic deadman control that cannot be circumvented. Then we have the **Speed-Log** and the **Pace Setter,** the "speed-at-a-glance" approach to speed indication and the most accurate speed control system. We also have the **Fuel Oil Heater** that prevents engine power loss in sub-freezing weather. And the **Automatic Ground Reset Limiter** that protects your traction motors. And now, we have the **New-Matic** toilet that's simple to operate, to service and maintain.

What's Vapor doing for your locomotives?

Ask your Vapor man about these and other fine Vapor products that can save you operation time and money. Or write the Transportation Systems Division, Vapor Corporation, 6420 West Howard Street, Chicago, Illinois 60648.
In Canada, Vapor Canada Limited.

VAPOR
VAPOR CORPORATION

Circle 14 on coupon page 69

"An even larger, single-engine unit with a rating as high as 5,000 hp is within today's design capabilities"

maintenance crews had to depend upon locomotive crews for information on any malfunctions which may have occurred during the day's run, and this was not always a consistent source of data. The annunciator, on the other hand, has lights that are triggered by a malfunction and it has a memory indication waiting for the maintenance man when he boards the unit for inspection purposes after a run.

As is true with many of the new developments it is working on to improve the diesel-electric locomotive, EMD worked closely with suppliers while designing the control modules. For example, Oregon Technical Products, developers of SEARCH, was kept informed of all the module developments and this firm eventually developed a module tester for off-locomotive testing. Always a proponent of standardization wherever possible, EMD designed its modules so that the OTP tester could handle them as well as those of any other locomotive manufacturer without requiring any special fittings.

● **Key development: New piston ring.** The stainless-steel piston ring for the turbocharged 645 diesel engine is also cited by Smith as a key development for the Dash-2 units. Chrome-plated on the top, bottom and face, this piston ring has a lot of stamina and can resist breakage. Like so many of the new ideas developing in the engineering section at EMD, this piston ring could be just another stepping stone toward an even bigger development. EMD has been engaged in a very ambitious program for controlling exhaust emissions from its units. The stainless steel piston ring has made possible a breakthrough in the development of a fire ring piston which EMD engineers feel will go a long way toward making the Roots-blown engines virtually smokeless. Smith thinks that this new piston could be available as early as January 1973. The turbocharged engine, being a relatively low smoke-producer anyway, does not require the new piston for smoke control, but a turbocharged fire ring piston is being developed for improved performance.

Beyond the development of the fire ring piston, EMD has been carrying on an intensive emissions-control program of its own while cooperating to its fullest in other programs sponsored by the AAR, individual railroads and government agencies. The diesel-electric locomotive is, in fact, a relatively low polluter. Nevertheless, EMD does want emissions as low as possible.

It's not just air pollution which EMD is fighting. Noise is in the battle, too, and Smith thinks that this could be a more important struggle than the one against exhaust emissions. The barrier-type insulation in the Dash-2 cabs has helped cut inside noise substantially.

● **Better adhesion.** Better wheel-to-rail adhesion, always a goal of railroads throughout the world, has been accomplished with the HT-C truck that's now a standard on the 6-axle Dash-2 models. Compared with its predecessors on SD units, the HT-C provides much better adhesion efficiency—93%, versus 77%. What this means is that under any given adhesion conditions, an HT-C equipped locomotive can haul up to 20% higher tonnages than earlier models.

Design improvements of this nature are the things that are making the diesel-electric the moving target that other types of motive power can't seem to overtake. The HT-C truck, modularity, a new pinion end bearing, a full-width head-to-liner gasket in the power assembly—new things like these are helping to keep the diesel-electric in the forefront. These 1972 improvements, working in concert with all those made by EMD engineers in past years, make things tough for the turbine, the fuel cell and the straight electric.

Although EMD is committing almost all of its design and developmental talent to improving the reliability and maintainability of existing units, this doesn't mean that experiments in the development of higher-horsepower units are being discontinued. Currently seven 4,200-hp SD45X units are in test service on Southern Pacific. Several modified and improved components are being watched very closely in this test service.

● **"Possible, but. . ."** EMD is convinced, Smith says, that an even larger, single-engine unit, with a rating as high as 5,000 hp, is well within the design capabilities that exist today. There is, in all likelihood, a need for such a unit on several railroads. "But we're not going to make any more step-ups in horsepower until we're sure of the reliability and maintainability of existing units," Smith emphasizes.

History indicates that EMD will reach the reliability/maintainability goals in an orderly fashion. In response to a need expressed by the railroads, EMD introduced in 1939 the first multi-unit diesel-electric locomotive designed specifically for freight service. As the demand for higher-powered locomotives was expressed by railroads in the immediate post-World War II period, EMD engineers re-designed the 16-567A engine, bumping its rating to 1,500 hp. Twelve years later, when dieselization of the railroads had been accomplished, a need developed for even more power, so EMD engineers brought out the 16-567C with a 1,750-hp output.

It's been like that all along—responding to the needs. As the demands for increased horsepower kept coming in, EMD engineers responded. In the process, problems in other areas—the traction motor, the filtering system, controls, and so forth—began to crop up and EMD engineers had to respond to demands for corrections of these problems. The turbocharger came along in 1959, and while it was a real blessing for those railroads that were thirsting for higher horsepower, nevertheless it created a host of problems. So, it was back to the drawing board, and soon solutions began to appear.

In 1965, the 567 engine, a standard since 1938, gave way to the 645 engine. This created an all new ballgame, and the second generation of diesel-electric locomotives came into being. Aside from giving railroads the additional power they needed, the 645 engine also gave a few headaches at the outset. But corrective action was taken throughout the second-generation period—and as can be seen in today's Dash-2 units, improvements are still being made. It's a continuous, consistent process.

● **Research goes on.** While EMD may rate the diesel-electric far above other types of motive power, this doesn't mean that the others aren't being investigated and evaluated. Engineers note that the straight electric unit does have many plus factors. As a matter of fact, earlier this year EMD entered into a non-exclusive licensing agreement with ASEA of Sweden. The license covers certain ASEA patents and manufacturing and technical information for thyristor-type all-electric units. Thus, EMD makes it quite clear that it plans to be in the locomotive business for a long time—and that it will use whatever type of power source the customer wants.

But, the story at EMD at the moment is the diesel-electric. A detailed study of the merits of both the diesel-electric and the straight electric is nearly completed, Smith says, and should be ready for circulation sometime this fall.

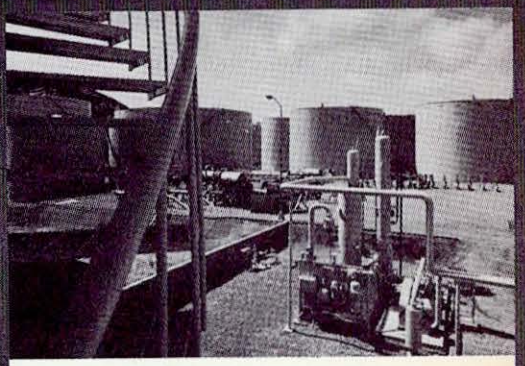
And from present indications, the "moving target" has moved far enough ahead to still maintain a commanding lead, all things considered. John German, assistant vice president-engineering, Missouri Pacific, sums up the diesel-electric's position this way: "In my opinion, with the improvements made in the past few years and under development now, the diesel-electric will still be 'King of the Road' for another 20 years." He's not likely to get too many arguments on this point from the folks at EMD.

Southern Pacific didn't stop at being a great Western railroad.

Southern Pacific has been a great Western railroad for over a hundred years, but we didn't stop there. Many years ago, to provide even better service for our customers, we added highway trucking services. Then, we began building pipelines which now serve six Western states. (We also operate the world's longest "coal slurry" pipeline.) More recently, we entered the field of leasing (Bankers Leasing Corp.), air freight (Southern Pacific Air Freight, Inc.), intermodal/international transport (Southern Pacific Marine Transport, Inc.), and computer/communications services (TOPS® On-Line Services, Inc.). Of course, we pioneered Piggyback and containerization services in the West, too.

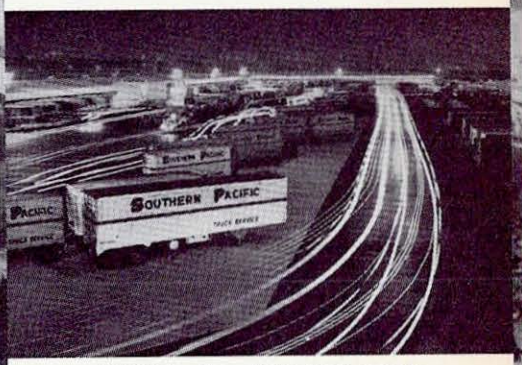
In addition, Southern Pacific operates complete land management services that not only provide the most advanced industrial planning and construction available, but also serve to protect and preserve millions of acres of forest, farm and range land in the West for future benefit and use.

Southern Pacific is proud of its role in serving the West and will continue to strive for sound transportation policies that will help us provide ever better transport services.



2,700 miles of pipeline.

Intermodal marine transport services.



27,000 miles of trucking routes.

Fast handling of containers and vans.

Southern Pacific

—the transportation company that does things first.

GM
MARK OF EXCELLENCE
Electro-Motive Division

What is our connection...

SMITH

. . . Team up to apply 21st century ball valve technology to 21st century locomotive transportation.

SMITH VALVE CORPORATION
Corporate and Manufacturing Headquarters
81 Hope Avenue, Worcester, Mass. 01603
Tel. 1-617-791-5511

Circle 8 on coupon page 69

THE FAMILY LINES.

We have 2,300 locomotives, over 136,000 freight cars and almost 8,000 trailers. We have some 40,000 people who know how to run a railroad.

We have a system that covers 16,600 miles. A network that serves 13 states with a population of more than 65 million Americans, nearly a third of the nation's total.

We're The Family Lines. And working together, the Seaboard Coast Line, the Louisville and Nashville, [illegible] ILL. the Clinchfield, and the Georgia Railroad can do a better job for you.

For example, we can offer you a Run-Thru Express from Chicago to Miami. Or trace your Norfolk-to-New Orleans shipment with an uninterrupted chain of computers.

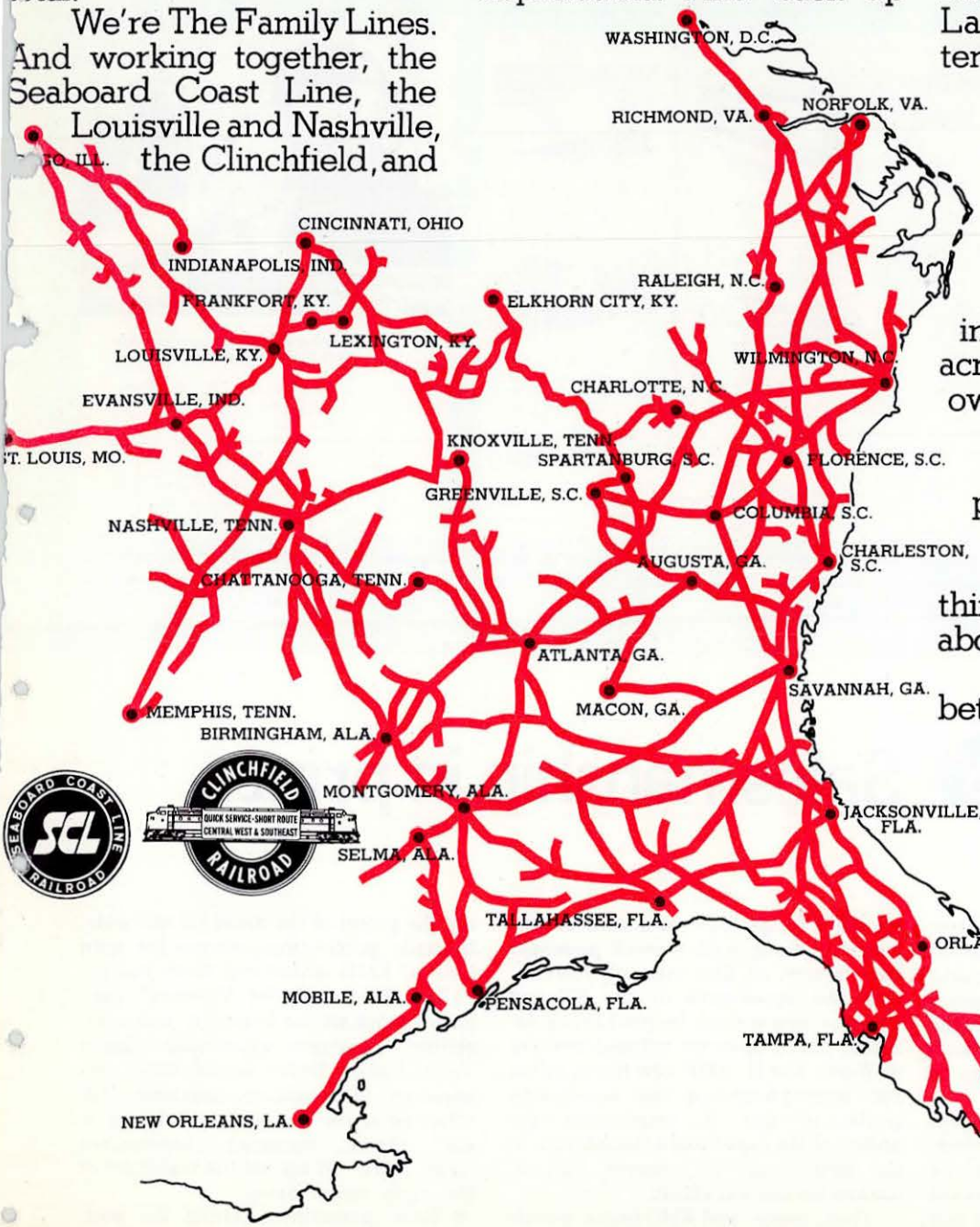
We can simplify your schedules. Make them more dependable. And back up our nationwide sales organization of qualified professionals with our next door—brand of service that is considerate, efficient and responsive to your needs.

We can haul your cargo in or out of more ports than any other railroad or combination of railroads in the United States — 38 South Atlantic, Gulf and Great Lakes ports and barge terminals.

Or, if you want to know what industrial development is like in our part of the country, we can send you site-data briefs on more than 3,500 industrial sites, including more than 20,000 acres of The Family Lines—owned properties.

So whether you're running through, shipping out or building up, we've got detailed brochures covering everything you'd want to know about The Family Lines.

Call or write us. We work better as a team.



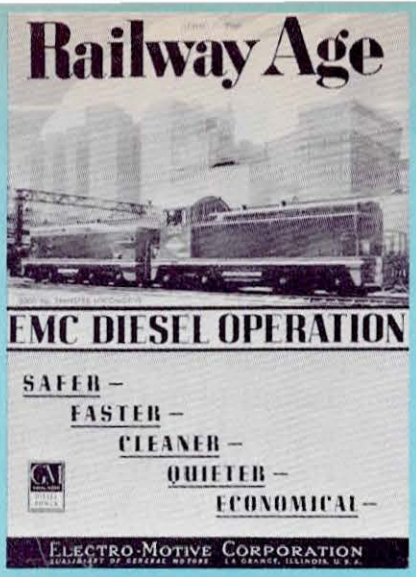
SEABOARD COAST LINE RAILROAD — SCL

CLINCHFIELD RAILROAD — QUICK SERVICE-SHORT ROUTE CENTRAL WEST & SOUTHEAST

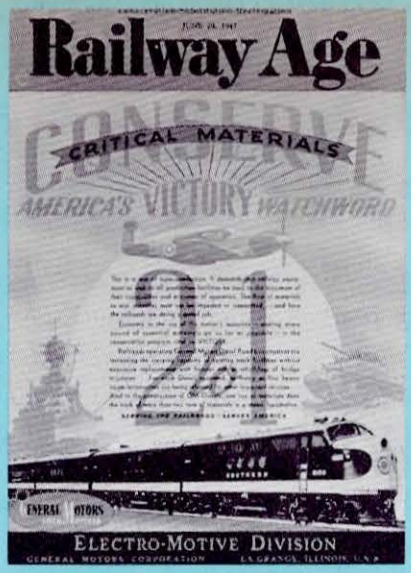
L&N

GEORGIA RR 1834 OLD RELIABLE COURTESY SAFETY SERVICE

Circle 16 on coupon page 69



Even in 1940, "environment" was point of EMD message; with Chicago Lakefront skyline as backdrop, diesel provided "cleaner, quieter" switching.



Critical early days of World War II found stress on conservation of fuel and materials; government got message and dieselization moved ahead.

Postwar America was marked with talk about dieselized future for the railroads as performance of diesels in wartime was hailed.

New General Motors Locomotives Offer
Railroads Millions in Savings Annually
New 567D Engines
ELECTRO-MOTIVE DIVISION GENERAL MOTORS

Higher horsepower levels were reached in 1959 when the 567D engine with its turbocharging was highlighted. Simultaneously, there was an expanded locomotive replacement plan aimed primarily at the earlier F models.

One new GP or SD followed another in early '60s. GP35 and DD35 were featured at 1963 equipment show.

EMD's 50th Anniversary

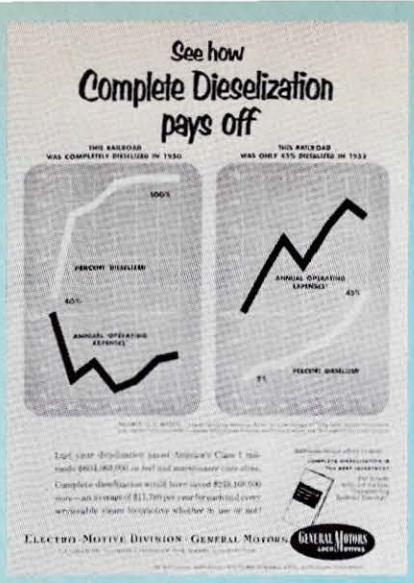
Salesmanship in print

Can a locomotive builder find success through advertising? Several generations of top managers at EMD have thought so. And the result has been a sustained advertising program that mirrors the development of the diesel-electric and, to a large extent, the recent history of railroading.

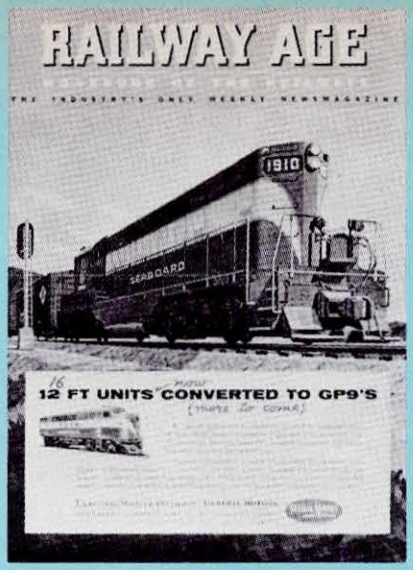
In the beginning, there was a concept to sell—but only a limited product line: Until EMD's FT demonstrator went on its eye-opening tour, "diesel" meant either a dumpy hood unit shuffling cars around a freight yard or a sleek beauty streaking along with a crack passenger train in tow. All that changed, however, with the appearance of the FT—and with the tremendous freight-hauling demands placed upon the railroad industry in World War II. EMD advertising called for "super-production and super-transportation"—and it emphasized the ability of the diesel to do the job and, at the same time, to conserve vital resources for the war effort.

Then, peace—and EMD began spreading the gospel of the diesel far and wide. In trade publications, always the solid base of EMD advertising, there was the "1946 Parade of the Veterans" campaign, emphasizing reliability and availability. Passenger advertising—"Better Trains Follow Better Locomotives"—reappeared in consumer magazines. Another ad series followed a "bright new era" theme, bouncing then-modern diesel power off against the teakettles of the early steam days.

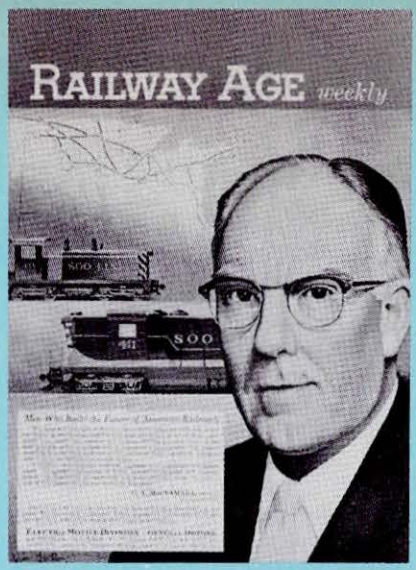
- **Then, peacetime.** During the post-



Fact-and-figure campaign of early '50s promoted complete dieselization in a wide range of trade, general news and business publications.



Trade-in time of mid '50s stressed conversion of aging FTs to new GP9s with promise of lower maintenance and higher productivity.



"Men Who Build the Future of American Railroads" looked from covers of Railway Age for almost three years in the late '50s. Above: Soo's G.A. MacNamara

Replacement parts quality was always stressed, along with promotions of new locomotive sales.

First phase of "third generation" with its stress on improved reliability currently features the Dash-2 line. Base for higher horsepower has also been established, but will not now be introduced.

war period, the thrust of EMD programs changed significantly—from selling the concept of the diesel-electric to selling complete and total dieselization. The introduction of the GP7 gave the theme a boost. So did the figures EMD was able to quote on the diesel's contribution to operating-expense reductions.

New ads appeared (many of them on Railway Age front covers as well as in other publications), telling how railroads were using the GP, the SD and the SW. And, in the mid-1950s, EMD's locomotive-conversion program—FT to GP9, for instance—got major play.

In the late '50s, EMD began what was to become one of the longest-running and most-noted trade ad campaigns—the presidential series "Men Who Build the Future of American Railroads," which appeared on Railway Age front covers in 1957-58-59.

● **The "most significant."** The last year of the presidential series, 1959, was also the start of promotion of the EMD horsepower breakthrough. In trade and newspaper advertising, EMD spoke of "The Most Significant Developments in Motive Power since 1945"—the introduction of the turbocharged GP20 and SD24 and the normally-aspirated GP18 and SD18, all powered by a new 567D engine described as "the finest expression yet of the General Motors 567 series."

With the 1960s came another long-running EMD campaign—dramatic paintings, run as spread ads, featuring individual railroads' use of the newest power coming off the LaGrange assembly line. Motive-power needs were changing, and as the engineers kept up with changing needs, artists and copywriters kept up with the engineers in featuring the range of GP and SD and DD units.

Over the years, while much of EMD's advertising has been dramatic, there has been no neglect of the nuts-and-bolts side of dieselization. In word and photo, EMD has talked about parts supply and service, warranties and training, trade-in programs and fuel consumption, maintenance savings and power ranges.

What comes next? Why, the EMD "third generation," of course. With the introduction of the Dash-2 models earlier this year, its first phase is already here. And with it, a new generation of EMD salesmanship in print. ■

INDUSTRIAL DEVELOPMENT Aggressive ID

Ike Heller: Toymaker turned developer

Ike Heller first came to the attention of Railway Age readers as the originator of the vest-pocket distribution park (RA, April 28, 1969). At the time his idea was to develop small problem properties along the railroad's right of way, solve the problems and place rail-served industries on it. While the 428,000 square-foot BFG distribution center is hardly a "vest-pocket" project, problem solving remains a Heller trademark.

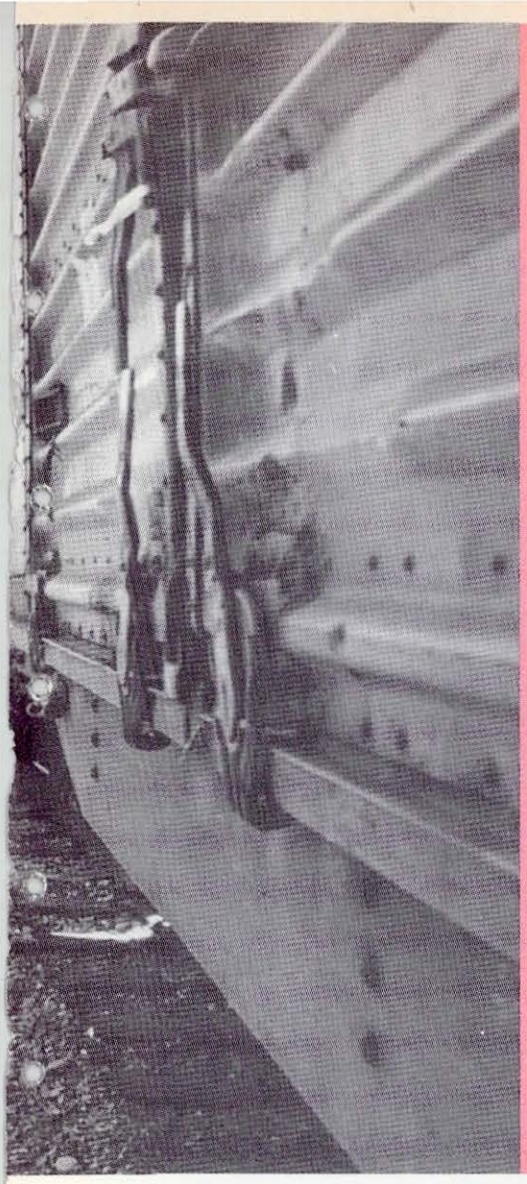
Beginning with very little capital, he started a toy manufacturing operation in the back room of an empty Brooklyn store and built it into a $30-million-a-year business, Remco Industries, Inc.

A couple of years ago, after having developed and successfully marketed thousands of toys, Heller left Remco, though he still retained a third of its stock. He travelled. He rested. He recharged his batteries to return to the business world. At 40 he was still too young to retire permanently.

Heller always wanted to build things of a more permanent nature than toys and the construction field was a natural for him. While at Remco, he was practically his own building contractor for the company's 650,000 square foot modern plant in Harrison, N.J.

So he became a builder and erected a number of distribution facilities for top companies. Quickly he recognized the need for rail-served, close-to-market distribution centers that companies could afford.

In his first four years as builder of distribution facilities, Heller has already erected major buildings for such corporate giants as H.J. Heinz, Owens-Corning Fiberglass, Western Electric and B.F. Goodrich.



PC's PAUL FUNKHOUSER calls it "a creative example of a carrier and a builder making railpower work for a customer."

B.F. GOODRICH warehouse at Bensalem, Pa., with inventory of 1.5 million tires, is bringing the railroad $1 million a year in new revenues.

puts tires on Penn Central

From the start it was a classic marriage of convenience:

—B.F. Goodrich wanted a master warehouse to serve its eastern markets.

—Penn Central wanted to pump new revenue into its coffers.

—And Ike Heller wanted to make a deal.

A giant, new 428,000 square foot distribution center in Bensalem, Pa., made proud papas of all concerned.

BFG has its warehouse—stocked with over 1.5 million tires. Penn Central has its revenue—over $1 million a year in new business. And Ike Heller, toy-maker turned builder-developer, has another showcase deal to further his reputation as one of the most resourceful figures on today's ID scene.

● **A client in a hurry.** From the beginning BFG was in a hurry. They wanted to expand their manufacturing facility at Oakes (Montgomery County), Pa. But first they had to relocate the plant's storage areas which were to be converted to production space. At the same time they saw the opportunity to efficiently consolidate three smaller warehouses.

Preliminary plans called for a ten-acre distribution center to be operational by late '71 or early '72. But in December 1970, BFG was still shopping for a site.

As Ike Heller recalls, "Up to that point BFG had checked out any number of sites, each of which had some flaw which they felt precluded its selection. Our approach is a little different. Initially we ignore the flaws. We just look for sites that make good distribution sense. Then we see what it takes to eliminate their flaws."

Among the sites that made distribution sense was a 21-acre plot in the Cabot, Cabot & Forbes park at Bensalem. It seemed to have everything going for it. It was served by the Bucks County spur of the Penn Central. Transportation pricing structures were very competitive. Service schedules were excellent. It was on Interstate 95 within minutes of the Penn and Jersey Turnpikes. In all it was seemingly an ideal location—but BFG was not convinced. While their reasons were not clearly defined, BFG's resistance to the site seemed to stem from some difficulty with their rail service at the Oakes plant.

● **The site was right.** Heller felt the site was right and decided to force the issue. He called a meeting of the concerned parties. Attending for Penn Central were Paul Funkhouser, senior vice president-sales and marketing: V.J. Floyd, assistant vice president-sales and marketing: A.J. Hafner, assistant director-industrial development; Frank Tatnall, manager-pricing; J.D. Finley, assistant director-pricing; H.M. Stacey, manager-national accounts-automotive; and Jake Wagoner, trainmaster at Reading, Pa. The Heller team included Project Manager Ron Roberts, Industrial Development Vice President Howard Hamilton and Ike Heller.

In a very candid exchange the site's "flaws" quickly came to the surface. As Paul Funkhouser recalls, "This was the first time we heard about what was apparently a long standing irritant. Because the Oakes plant had outgrown the existing track, they had great difficulty in switching full and empty cars at the loading docks. So before the opportunities of Bensalem could be developed, the problems of Oakes had to be solved".

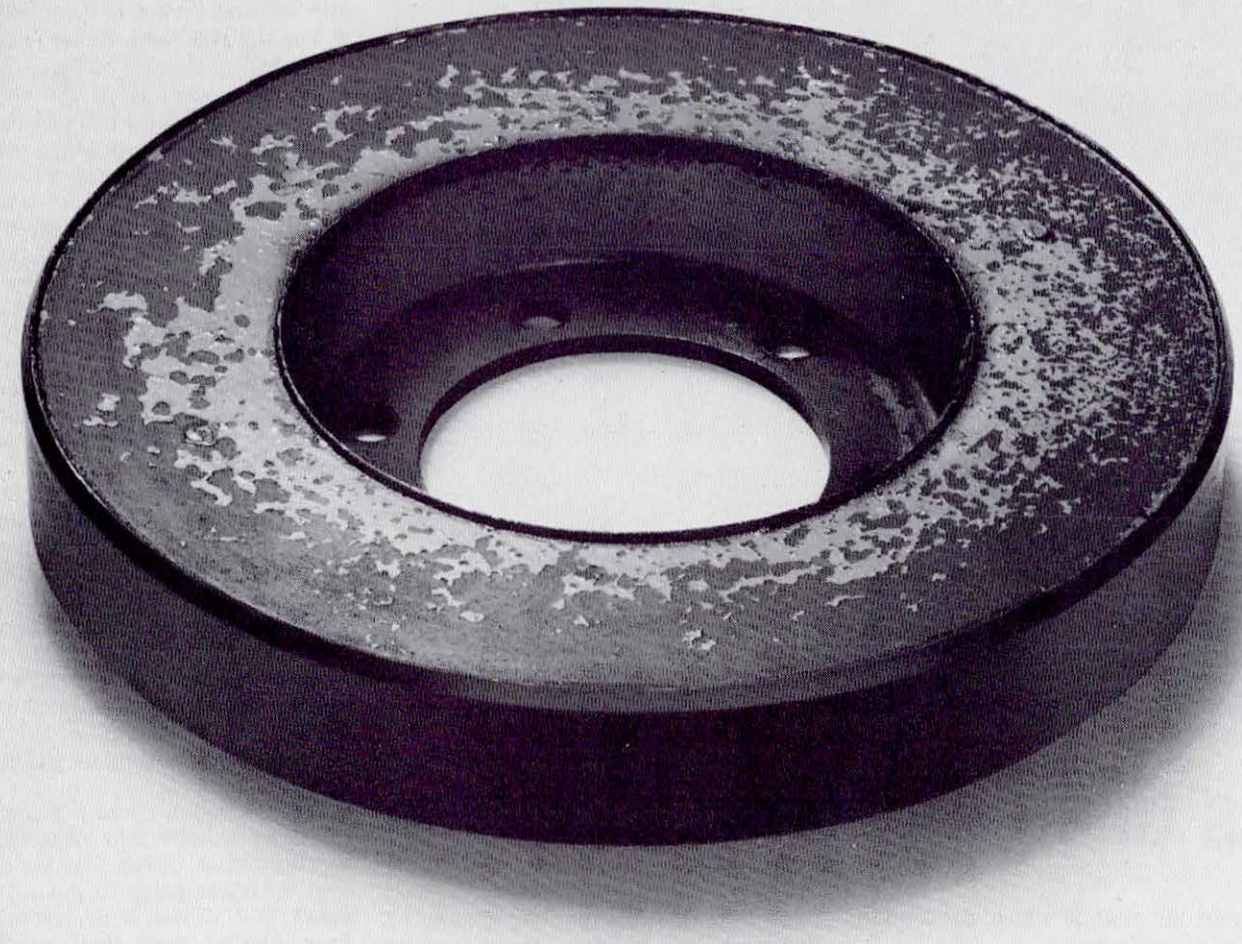
The solution was obvious. An additional quarter mile of service track was needed at Oakes. The big question was: Who was going to put it in? BFG didn't feel it was their responsibility. Penn Central said they would have difficulty financing any new construction.

● **"We'll put in the track."** Ike Heller came to the fore. As he puts it now, "Everything else about the deal was so right, we just couldn't see letting the switching problem hold us up. After going around on it a few times, I said, 'The hell with it. We'll put in the track' "—which was exactly what was done. To help put a client into a park he thought was right, the builder-developer paid to have a quarter mile of track built 50 miles from the site of his proposed project.

And to avoid a potential Oakes problem popping up again, the track layout at Bensalem was made to handle 84-foot cars. But this uncovered another "flaw" in the site. The site area did not permit a sufficient radius of curvature to handle larger cars.

Once again Heller provided (and paid for) the solution. An easement was

The last one off is Houdaille.



The Houdaille Torsional Vibration Damper is built to serve for years.

It's reliable... known for quality and durability by most major diesel manufacturers. By providing these manufacturers with our products and expertise in torsional vibration control, Houdaille is proud of its contribution to the rail industry.

Houdaille takes special pride in saluting the Electro-Motive Division of General Motors in celebrating its 50th anniversary as a leader in rail transportation technology.

Hydraulics Division, Houdaille Industries, Inc., 536 E. Delavan Avenue, Buffalo, N. Y. 14211.

HYDRAULICS HOUDAILLE

Circle 17 on coupon page 69

purchased from private owners and BFG was on the PC's Bucks County spur.

Having ground down the site location flaws, the next big problem was scheduling. BFG's plans still called for completion in less than a year. They would have liked to take advantage of the government subsidized financing plans available in Pennsylvania, but just arranging government subsidized financing can take up to a year or more. And even then it can go sour at the last minute.

Characteristically, Ike Heller says, "If we had waited for subsidized financing we'd still be shuffling the papers. Fortunately we're in a position to finance projects of this scale on our own and still deliver at a lower cost."

● **The rains came.** With track building, easement, financing, utility access, state, county and municipal approvals behind him, Heller turned to the job of building a ten-acre distribution center in less than ten months. And then it started to rain.

The next ten months were among the wettest on record at the Philadelphia Weather Bureau, nearly double the annual average. Ike Heller recalls, "Goodrich had hundreds of people and millions of pieces of material in motion to coordinate with our ten month delivery date. But with all that rain, I started having nightmares about tons of tires showing up and us still up to our hips in mud."

To bring the job in on time Heller eventually paved the entire construction area with "soil cement" and bird-dogged the job personally—days, nights and weekends.

Ironically, while too much water was one construction problem, too little water was another. Because of the highly flammable nature of rubber tires, huge water reserves are needed for potential fire fighting. To get the needed water Heller tapped into the Bensalem water line and for a fail-safe second source he laid another half mile of pipe, tapped a major Philadelphia transmission line, then dedicated the new mains to the town.

● **Making railpower work.** The first Goodrich employees moved in on Feb. 24, 1972, less than ten months after construction began. Two days later the first shipment of 250,000 tires was off-loaded from the newly built Penn Central spur. In full operation the warehouse can receive 15 cars with 100,000 tires from plants as far away as Los Angeles.

Reflecting on the lessons of Bensalem, Paul Funkhouser says, "Coordinating the capacity of Oakes and Bensalem is one of the most creative examples I know of a carrier and a builder making railpower work for a customer. Our people came through with the right pricing structures and service schedules. And Heller delivered—start to finish."

ID

Southern offers one-stop shopping for site-seekers

You are a manufacturer who has decided to locate a new plant in the southeastern part of the U.S. You contact Southern Railway System's industrial development department. From this point on, pleasant surprises unfold. You are not deluged with brochures, maps, reports, papers; you do not then spend days traveling to numerous cities and towns visiting prospective plant sites.

You are invited to Southern's Washington, D.C. headquarters where you visit the Industrial Prospect Briefing Center. Here, in comfortable surroundings, you are able to view slide presentations with a wealth of details concerning key locations. After identifying those best suited to your requirements, you are in a position to concentrate your field inspections on these.

"Presentations usually start with an aerial view of the city where the site is located. Others include the trading area, available labor, the work force and information on utilities (gas, water, electricity), tax data, general description of the site, plus maps and aerials of the property. These are some of the many features that can be shown," says Jerry L. Townshend, general manager, industrial development department.

"The concept of the Industrial Prospect Briefing Center offers a centralized facility for simultaneously presenting several Southern-served locations to an industrial prospect via slides and films from which those of greatest interest may be determined prior to field inspection. Photographs, charts, maps and data are presented in a format affording convenient comparison between locations."

The Briefing Center serves Southern's ID men, as well as potential customers, because it reduces the time required to compare locations and makes site selection more convenient, more efficient. "An important plus is that the Briefing Center concept allows the prospect to 'move about' from site to site without showing his hand in any way before he zeroes in on his one or two prime location possibilities," Townshend says.

● **Benefits are numerous.** The Briefing Center provides benefits not only for the plant site prospect, but also to Southern and the community. The community gains importantly by way of exposure to corporate officials that a local development agency might not have had an opportunity to contact. For Southern, as well as the prospect, the Briefing Center provides these benefits:

—Wider area comparison range;
—Reduced site inspection cost;
—More location factors considered;
—Preview of areas;
—Improved community relations;
—Public relations and advertising opportunities;
—Training facility and visitors center.

Because the Briefing Center is at Southern's headquarters, it "affords convenient access to all ID department files, maps and staff. Also, quick access is available to other departments that may be required, such as customer service engineering, law, real estate and insurance," says Robert J. Stall, Jr., manager research and planning.

● **Much in small space.** The Briefing Center is a 13- by 26-ft room which can accommodate up to 16 people. With a conference table in the center, there is plenty of room for participants to spread out papers and maps and to make notes.

However, the main purpose is to present information by way of color-slide presentations, charts and other visual graphics. At one end of the room is the optical systems cabinet housing a side-mounted movie projector and slide projectors. At the opposite end is a pull-down projection screen.

A self-contained multi-purpose display panel contains a magnetic chalk board, a large scratch pad that can be mounted for lecture-type presentations,

BRIEFING CENTER at Southern's headquarters gives industrial development prospects a comprehensive view of prospective plant sites including information on taxes, utilities, labor market, etc. Slide and movie projectors (rear of room) project on pull-down screen at opposite end.

and wings at each end equipped with a special fabric that will support other display material. A small projection screen pulls up from the bottom of the display panel for auxiliary projection such as an overhead Vue-graph. Nearby is a small control panel mounted on a lecturn to provide remote control for starting and stopping the movie projector and for operating the slide projectors.

● **Expertise available.** The Briefing Center is the responsibility of the research and planning section of Southern's ID department. Expertise of economists, research specialists, planning engineers and geologists is employed in assembling a slide presentation. Daily operation and field work among the communities is the responsibility of a research specialist working under Stall.

Flexibility is a key word here. Programs are flexible in that they can be tailored to a particular community's efforts in ID. "Also, a presentation can be transported to a prospect's office, to the community itself or to any other designated spot. For example, Atlanta might be chosen for discussion of several locations in the State of Georgia. Moreover, presentations can be developed on an entire state, or a region such as the Tennessee Valley area of northern Alabama or Tennessee," Stall says.

FIELD INSPECTION

After a prospect has viewed slide presentations on several locations at the briefing center, he is given brochures containing the same information he saw on the screen involving the two or three locations of highest interest. He is now ready for field inspection, which is arranged for by a Southern ID manager who accompanies the prospect on his trip.

● **Community cooperation.** Southern has compiled presentations for 12 communities, one in each state served: Huntsville, Ala., Jacksonville, Fla., Atlanta, Ga., Mt. Vernon, Ill., Princeton, Ind., Louisville, Ky., New Orleans, La., Meridian, Miss., Charlotte, N.C., Columbia, S.C., Knoxville, Tenn., and Danville, Va. In each instance, the local chamber of commerce, the state development commission and the utilities responded with great enthusiasm, lending slides for duplication and providing statistical information, Stall reports.

Requests have come in from communities to be included in the program. Townshend says that they are working on 24 presentations which, hopefully, will be completed in about one year. Eventually, Southern may have 75 to 80 such slide presentations. Constant liaison is being maintained with these communities for additional presentations.

The Briefing Center was opened March 29 this year, and was an almost instant success. In addition to site seeking manufacturers, Southern has hosted engineering consultants, local development groups and state agencies.

Introducing Barco's new speed information systems

SIS 400

A new standard of reliability for electronic speed indicators. Built-in self-check circuit. Extensive "on board" field testing program has confirmed its durability. Available with following standard options:

1. ***Semi-automatic dual range for slow indication, hump or loading operations.**
2. ****Single overspeed adjustable through entire speed range.**
3. **Console mount indicator.**

*Manual or automatic also available
**Multiple overspeed also available

Barco's new speed indicator dual range option helps in loading unit coal and ore trains and hump service. Accurate train speeds are measured down to 1/10 MPH.

On the other hand, using the same dial on the same indicator, the engineer can read 65, 74, 60 MPH (just like any conventional speed indicator), when he's rolling along at high speeds!

Completely field-tested by many railroads, Barco's new speed indicator is built for rough, tough road work. It's shock-mounted with a rugged steel case. The low profile design of the axle drive reduces the possibility of being knocked off.

500 SERIES RAPID TRANSIT

Using single range indication on rapid transit cars, Barco's new speed information system is so accurate it can keep the doors from opening at speeds above 2/10 MPH.

An easy-to-read illuminated indicator assures accurate, quick monitoring of speed and acceleration/deceleration. Plug-in circuit boards with internal self-check circuit permit easy addition of optional equipment which includes: remote indication, over-speed control, dual range indication and a recorder. For more complete information, call your Barco representative. Or write for Barco Product Bulletin BPB 2103R, Aeroquip Corporation, Barco Division, 500 Hough Street, Barrington, Ill. 60010, subsidiary of Libbey-Owens-Ford Company.

Aeroquip products are protected by patents internationally.

Aeroquip
BARCO DIVISION

Circle 40 on coupon page 69

Opportunity builders.

If you're thinking of growing, call our experts on the South's 364 Greener-Pastures counties. They're all at (202) 628-4460

They even include geologists. Plus research and planning specialists — the only ones we know of on any railroad industrial-development staff. Plus experienced industrial representatives who've worked and lived in widespread parts of the Southern-served South.

They're uniquely qualified to help you locate your new plant for greatest opportunity.

We've brought them all together in Washington to give you *single-point* contact with all 364 Southern-served counties. One source for everything you want to know. About taxes. Markets. Resources. Transportation. Labor. Living conditions.

They're ready to build opportunity for you. To get them started, call Jerry L. Townshend, General Manager — Industrial Development, at (202) 628-4460. Or write him at Southern Railway System, P.O. Box 1808, Washington, D.C. 20013. Your inquiry will be held in strictest confidence.

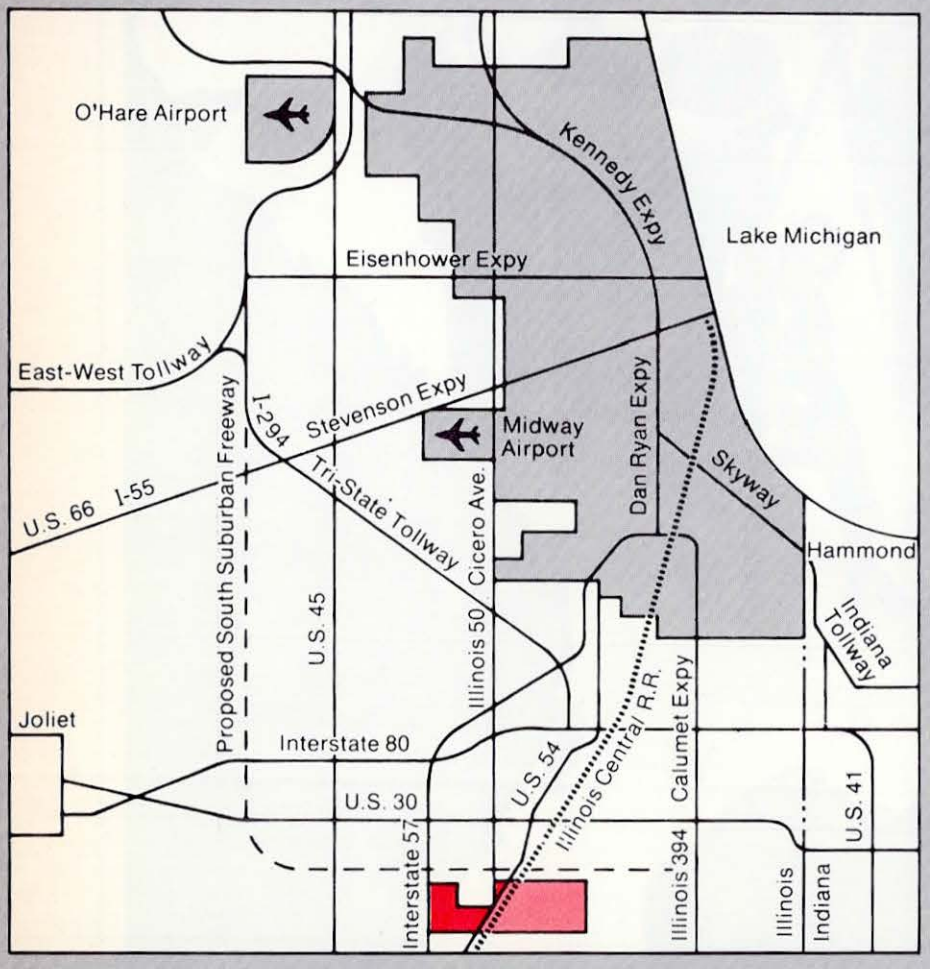
SOUTHERN

THE RAILWAY SYSTEM THAT GIVES A GREEN LIGHT TO INNOVATIONS

Circle 18 on coupon page 69

ID

Illinois Central Gulf is lifeline for new community



Location Map

Governors Gateway Industrial Park
Park Forest South
Chicago

GOVERNORS GATEWAY INDUSTRIAL PARK is on Illinois Central Gulf mainline about 32 miles south of Chicago, yet within the Chicago switching district.

"It is very fortunate for an industrial park to get service from a railroad that is economically viable, and to be on its mainline. Also, we have had a direct, open line of communications and understanding with Illinois Central," states Jack Shaffer, president, Gateway Industrial Development Co. He is speaking about Governors Gateway Industrial Park, a key element in the new development of Park Forest South.

● **New community under way.** Located about 32 miles south of Chicago, Park Forest South is being developed through comprehensive planning to provide all aspects of a complete city—housing, transportation, commerce, industry and recreation—for a population expected to reach 110,000 by 1985.

Economic viability of most any community depends upon commerce and industry, and Park Forest South is no exception. However, the planning for industry is Governors Gateway Industrial Park. It is located separately from the residential areas, yet is convenient for private automobile or public transportation so employees and managers may live in Park Forest South and work in plants located in the industrial park.

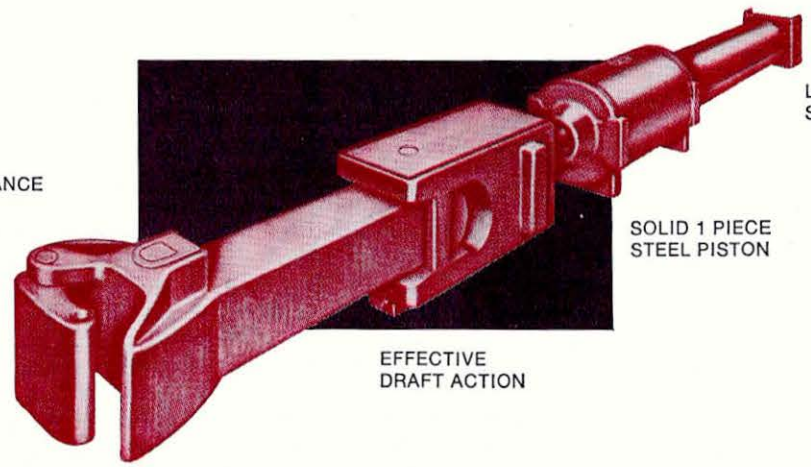
GGIP consists of 1200 acres located adjacent to Interstate Highway 57 and U.S. Highway 54 which parallels the mainline of the newly merged Illinois Central Gulf. About 22% of the park area is now committed, and includes Chemetron, Johnson & Johnson, and Wilson Pharmaceutical, to name a few.

In addition to efforts of Shaffer and GIDC, much credit is given to C.S. Catlett, director of industrial development, ICG, and Paul H. Reistrup, vice-president traffic, ICG. "Catlett and Reistrup have been very helpful to us in our efforts to obtain industries for Governors Gateway," Shaffer says.

● **Understanding is key.** This successful working relationship of the developer with the railroad—and Shaffer feels that a railroad must be a part of an industrial park—is largely based on an open line of communication between them. On the developer's part, much of the understanding probably stems from the fact

KEYSTONE RELIABILITY...

What else would you expect from good Railroad Men?



No design failures and few manpower failures out of over 60,000 Keystone SHOCK CONTROL Units in service should be convincing proof our *railroad* experience can prove a real saving and bonus for you.

Call Jim Smith at 717—761-3690 and we'll show you facts and prices that will convince you it's your best and most reliable buy.

KEYSTONE RAILWAY EQUIPMENT COMPANY
Simpson Ferry Road
Camp Hill, Pennsylvania 17011

Circle 19 on coupon page 69

Governors Gateway Industrial Park
• 800 Acres Full Improvements
• I.C. Railroad Mainline Service
• Highways I-57 and U.S. 54
• Coaxial Cable Network
Park Forest South Developers Inc.
Phone 534-6501
Governors Gateway Industrial Park
• 800 Acres Full Improvements
• I.C. Railroad Mainline Service
• Highways I-57 and U.S. 54
• Coaxial Cable Network

OVER 22% OF THE ENTIRE ACREAGE of Governors Gateway Industrial Park has been committed for development. Marvin Mueller, president, Skyline Movers, Inc., discusses new location for his company with Jack Shaffer, president, GIDC.

that Shaffer has been "on the other side of the fence." He had been manager of industrial development in Chicago for the New York Central, and for three years headed up Chicago & North Western's industrial development department as assistant vice-president.

Four major benefits are:

—Governors Gateway Industrial Park is served by a major railroad that is economically strong;

—It is of "immeasureable value" to be served by the mainline of the railroad;

—GGIP is located in the Chicago Switching District which, for industries located in the park, means they receive Chicago rates on cars and piggyback, making "the industrial park competitive with any major development in the Chicago area for traffic moving north and west of Chicago," according to Shaffer;

—Being only 8.5 miles south of Markham yard—a major ICG classification point—makes car availability very good while being away from the "inner city" provides more efficient switching service.

At present GGIP is served by a local freight turn once daily, but sometime next year when plants now under construction are operating, it is anticipated that ICG will provide twice daily switching service.

● **Developer puts in track.** In contrast to the practices in some industrial parks, the developer is paying for track construction, rather than the railroad. In this situation, ICG furnishes guide lines for track layout and construction. A proposed layout is made up and sent to ICG for approval. Cooperation has worked so well that track approvals are being received within five working days after they are submitted. Following construction, ICG engineers inspect the track, and once again an approval is obtained from the railroad. At this point, the railroad is given title to the track and the necessary right-of-way, which the railroad then maintains. "This arrangement about trackage means that the railroad provides cars and service, and these are the only things our customers want," Shaffer says.

Presently, there are about 2,000 ft of trackage in the industrial park. In addition to sidings to specific plants, there will be storage and setout tracks for cars. Consideration is being given to a team track for those industries that would not require sidings.

● **Commuter service extended.** ICG will extend its commuter service another 4½ miles to a newly constructed station at Park Forest South, probably next spring. Thus the industrial plants can expect to be able to draw from the south suburban Chicago labor market. A community bus service, now connecting with the present ICG station at Richton, will, of course, operate to the new PFS station. This also serves residential areas so PFS residents need not drive to their jobs in the industrial park.

Thus, ICG commuter service, as well as its freight service, will continue to play an important role in the development and growth of the Park Forest South community—industrial, as well as commercial and residential.

"The strategic location of this new industrial park will afford new industries locating there the best of rail transportation, and we on Illinois Central Gulf are most pleased to welcome this new industrial area to the service of the railroad," says Reistrup.

● **Ecology role too.** The industrial park is zoned for I-1 and I-2 industry, and as part of the requirements for occupancy, convenants to the land deeds set performance standards for environmental quality. Companies now in the park, as well as prospects, have been "delighted" that there are ecology performance requirements. The covenants recorded against the land cannot be changed without 100% agreement by residents of the industrial park. Basically, these covenants assure an industry that it cannot be penalized if, in the future, the village desires to change the environmental requirements, as long as the industry is meeting the standards set forth in the covenants. Environmental performance standards cover noise, vibration, smoke, particulate matter, toxic matter, odorous matter, fire and explosion hazards, and glare.

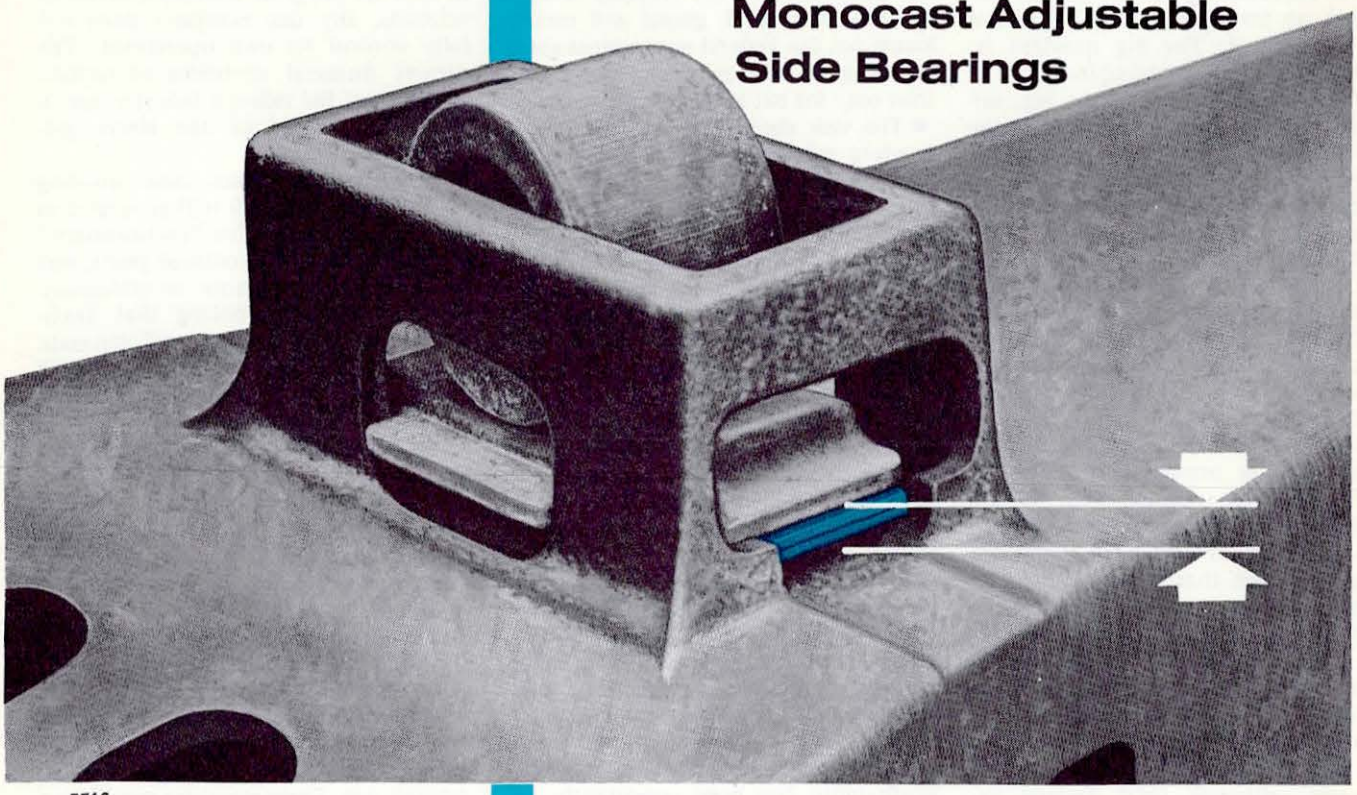
● **Coax cable net helpful.** One of the more advanced features of the industrial park, and of the entire community, is the installation of an underground double coaxial cable system which will link the various industries to fire and police stations. By use of strategically located TV cameras, plants will be able to have surveillance service around the clock at a savings compared to having only guards or watchmen. The cable system will also connect to banks, the hospital, a time sharing computer service and Governors State University. GSU has stated that it will work with industries on employee training programs. Although these may range from home study to classroom instruction at GSU, the coax cable system will enable an instructor at GSU to conduct classes for men working in plants. Thus, without leaving the plant, employees could receive instruction, thus saving travel time to and from GSU.

Plants now under construction in the industrial park will probably be operating next summer, a few possibly by the end of this year. By 1974, Governors Gateway Industrial Park will be an active place. While some industrial parks need 20 years to achieve full plant occupancy, Shaffer says GGIP will probably reach that point in 12-15 years. ■

UP TO 5/8 INCH ADJUSTMENT!

BARBER

Monocast Adjustable Side Bearings



5516

The BARBER Monocast Adjustable Side Bearing is designed for EASY, LOW COST correction of clearance variations between car bodies and truck bolsters—on new cars, or cars in service.

ECONOMICAL!

Initial cost is lowest when side bearings are ordered as integral parts of truck bolsters. Also available as separate units.

EASY ADJUSTMENT!

Full 5/8" adjustment range can be utilized without costly removal and replacement of fasteners. Simply lift roller and roller seat enough to insert or slip out shims through bearing's end slot.

EXTRA STRONG!

Drop-forged roller and roller seat are heat treated to stand up under today's heavier loads. Available in either 3" or heavy duty 4" roller width. WRITE TODAY FOR SPECIFICATIONS.

"Talk to the Man from Barber"

BARBER STANDARD CAR TRUCK COMPANY

332 S. MICHIGAN AVENUE, CHICAGO, ILLINOIS 60604, U.S.A.
CABLE: CARTRUCKS

Barber Products are designed and engineered exclusively by Standard Car Truck Company, and are available under license in Australia, Belgium, Canada, Japan, Mexico and South Africa.

Circle 20 on coupon page 69

Railroads in 1980: A DOT projection

Railroads will be called upon to produce 967 billion ton-miles of freight service annually by 1980. To tool up for the job, they need to invest $32.9 billion in capital improvements during the decade of the '70s. And that is a rock-bottom figure which assumes the continuance of current service levels. If operating and service standards are to be sharply improved, an investment of $41.6 billion will be needed. The big question is: Where is the money coming from?

These projections—and the big, unanswered question—are contained in the "1972 National Transportation Report" which Transportation Secretary John A. Volpe submitted to Congress early this month.

Intercity railroad freight transportation is only a part of the broad spectrum of transportation activity covered in the DOT report. But it is an important part since, as DOT points out, railroads still move more of the nation's total freight package than any other mode. DOT estimates the railroads' share of total ton-miles at 35.9% in 1970. While the railroad share of the market is expected to decline to 33% in 1980 and to 31.3% by 1990, it will still be greater than that of any competing mode.

● **Railroads shortchanged.** At the outset, the DOT report suggests that in terms of Federal expenditures for transportation, rail carriers have been shortchanged: "Over the last 15 years Federal expenditures in all modes have shown increases, although total Federal expenditures in transportation have decreased as a percentage of total nondefense Federal expenditures. Since 1957 the annual Federal expenditure on highways has more than doubled, although as a percentage of total Federal expenditure in transportation it has decreased from 80% to about 65%. The more dramatic percentage increases in recent and current budgets have been in aviation and in urban public transportation. The Federal government has become increasingly involved in financing local transportation in urban areas, in contrast to its more traditional role of facilitating interstate commerce. It has had more and more influence through its Federal aid programs on the kinds of transportation facilities that get built in our urban areas. Only recently (except for the early land grants and certain loans) has the Federal government spent anything on the railroad system, and then only for rail passenger service."

● **The task ahead.** The inequities confronting railroads in the transportation marketplace are further spelled out in that section of the DOT report dealing with traffic projections.

"As the estimates show, the rail and water shares of total freight traffic are expected to decline while the pipeline share and the shares of both for-hire and private trucking are expected to increase. While air cargo will probably have the highest percentage increase, its total traffic in ton-mile terms will still be a small part of the total by 1990. Of the major freight-carrying modes, air and rail are the only ones nearly fully subject to Federal economic regulation. Only about 40% of truck traffic is regulated. The profitability of the intercity truck and water modes has been generally similar to that of the manufacturing industries, while the profitability of the air carriers has fluctuated a great deal above and below the manufacturing average from year to year. Rail profitability has been consistently below this average and pipeline profitability has been consistently above it.

"The institutional structure of the different modes in the intercity freight industry is such that the forces of the free market are very much influenced and constrained by its peculiar characteristics. For example, while a large portion of trucking and water traffic is either private or otherwise unregulated, railroads are fully subject to the pricing and other rigidities of economic regulation because of their common-carrier status. Pipelines and railroads build and maintain their own routeways, subject to state and local property tax, while air, highway, and water modes have their routeways paid for at public expense, in some cases through user taxes. Because of the great interdependence of railroads, any one company does not fully control its own operations. The current financial problems of certain segments of the railroad industry are in part a reflection of the above difficulties."

● **Financing the future.** After quoting the estimates of $32.9 billion needed in the current decade for "evolutionary" improvements in the railroad plant, and $41.6 billion for more revolutionary changes—and after noting that traditional financing methods will generate only $13.5 billion of this—the DOT report addresses itself to the question of how the capital-investment quandary is to be resolved. In its "Guidelines for Future Action" section, DOT concedes that the large capital outlays railroads will require "do not appear to be forthcoming without changes in regulatory practices and some government assistance," adding:

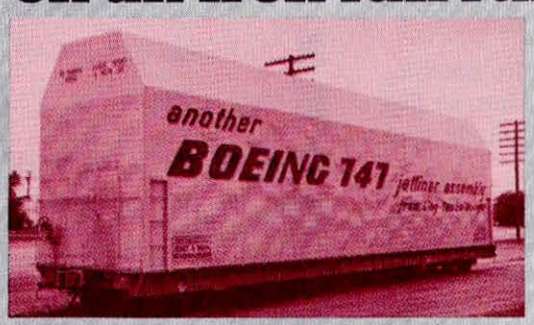
"The Administration presently has two proposed bills pending before Congress that would allow surface carriers to improve their efficiency. These are the Transportation Regulatory Modernization Act and the Transportation Assistance Act. These measures would go a long way toward a solution to the problem of improving the efficiency of surface carriers, including railroads. Priority should, therefore, be given to their enactment."

Not mentioned in the DOT study: the proposed Surface Transportation Act of 1972 which all modes support as the best way to help railroads help themselves, but which is the subject of intra-Administration squabbling. ■

ESTIMATES OF INTERCITY FREIGHT TRAFFIC

Mode	1958		1970		1980		1990	
	Billions of ton-miles	Percent	Billions of ton-miles	Percent	Billions of ton-miles	Percent	Billions of ton-miles	Percent
Rail	559	39.3	740	35.9	967	33.0	1,223	31.3
Truck (for-hire)	96	6.7	196	9.5	325	11.1	459	11.7
Truck (private)	82	5.8	132	6.4	212	7.2	300	7.7
Water	452	31.7	586	28.4	801	27.3	1,042	26.7
Pipeline	235	16.5	403	19.6	614	20.9	852	21.8
Air	0.7	–	3.9	0.2	14.0	0.5	33.3	0.8
Total intercity	1,424	100	2,061	100	2,933	100	3,909	100

Pampered protection for a jet on an iron rail runway



Airframe components for the Boeing 747 superjet, world's largest commercial jetliner, require a giant boxcar when they're shipped by rail from the Southwest to the West Coast. FreightMaster® end-of-car cushioning equipment helps provide the high level protection that both car and cargo require.

L & D records for the 747 superjet component shipments show the job accomplished with no reportable damage. FreightMaster protection for the cars helped keep them rolling on

More and more shippers and railroads are agreeing—when you want the best combination of cushioning at the best long-term cost, FreightMaster is at the top of the list. Lighter installed weight, a longer record of superior protection, and a service organization of Assistance-In-Depth Engineers are all vital parts of the protection package that FreightMaster puts together to solve any cushioning problem.

We'll be happy to show you how the nation's leading railroads and shippers are using FreightMaster to solve their L & D problems. There's every reason to believe FreightMaster can help your shipments have a happy landing, too.

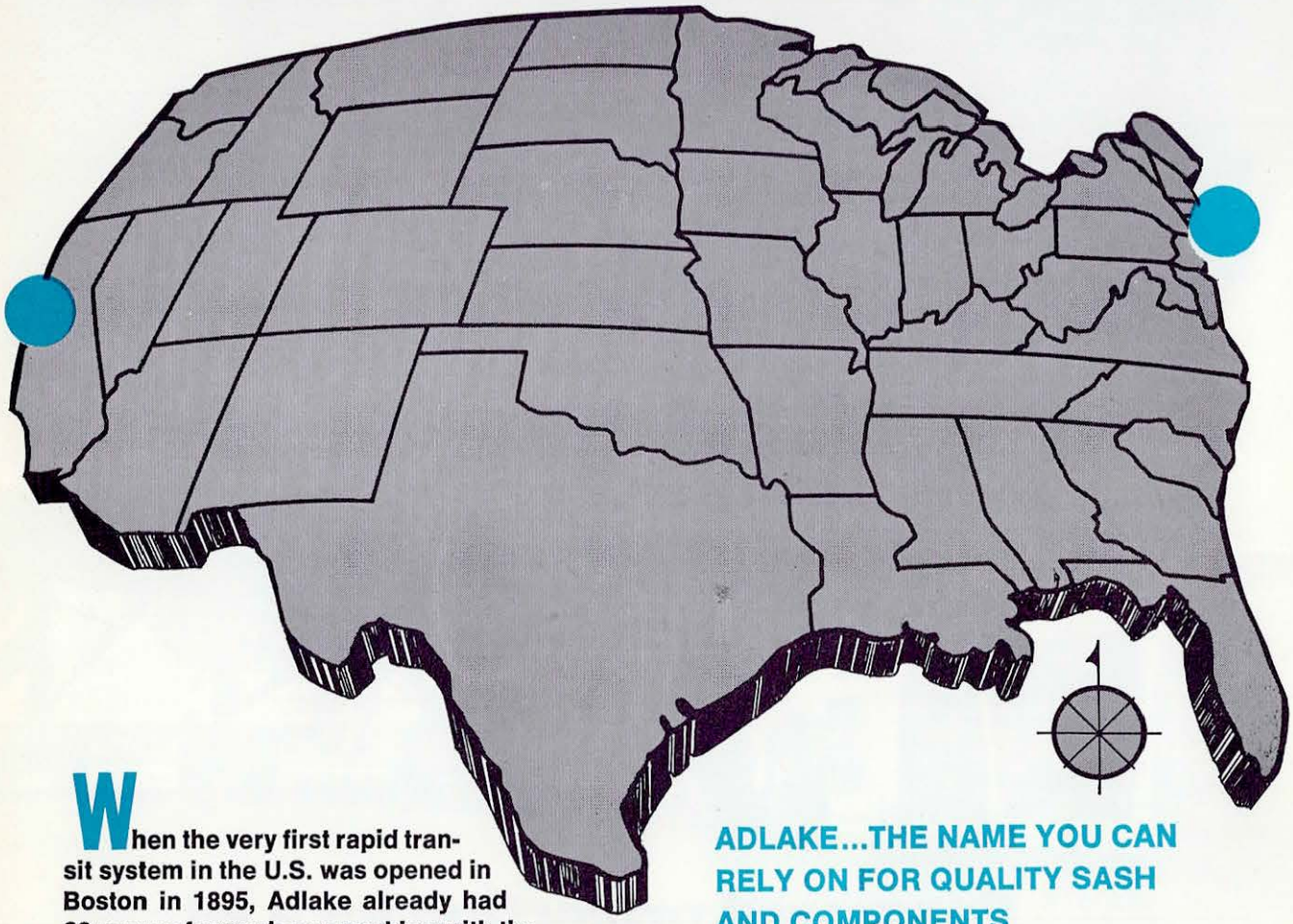
FreightMaster

A **Halliburton** Company

In U.S.A.: P.O. Box 40555, Fort Worth, Texas 76140•
In Canada: Hawker Siddeley Canada Ltd., Montreal•
In Mexico: Armendariz, S. de R.L. de C.V., Av. de los Insurgentes Sur No. 1824, Mexico 20, D.F.

MEMBER RPI

from Boston (1895) to San Francisco (1972)



When the very first rapid transit system in the U.S. was opened in Boston in 1895, Adlake already had 38 years of experience working with the nation's railroads. And in 1972 when San Francisco opens its modernized rapid transit system... Adlake is there, too.

In fact, Adlake's quality components are used by every major railroad and transit system in the United States...plus many more in Canada and other parts of the world.

Today, this vast experience (115 years now) has made Adlake one of the few completely integrated manufacturers providing one-source responsibility for almost all your transportation car component needs. And, all your demands are met with a program of total quality control.

Adlake SINCE 1857

1025 N. Michigan St.
Elkhart, Indiana 46514
219 / 264-1141

ADLAKE...THE NAME YOU CAN RELY ON FOR QUALITY SASH AND COMPONENTS

- CURVED & FLAT SASH
- DIAPHRAGMS & CAR CLOSURES
- SASH TRIM
- DOOR LOCKS & HARDWARE
- LUGGAGE RACKS
- STANCHIONS & WINDSCREENS
- MARKER & HEADLIGHTS
- INDICATOR LIGHTS
- SUN VISORS
- OPERATOR'S CURTAINS & FIXTURES

THE ADAMS & WESTLAKE COMPANY

Circle 22 on coupon page 69

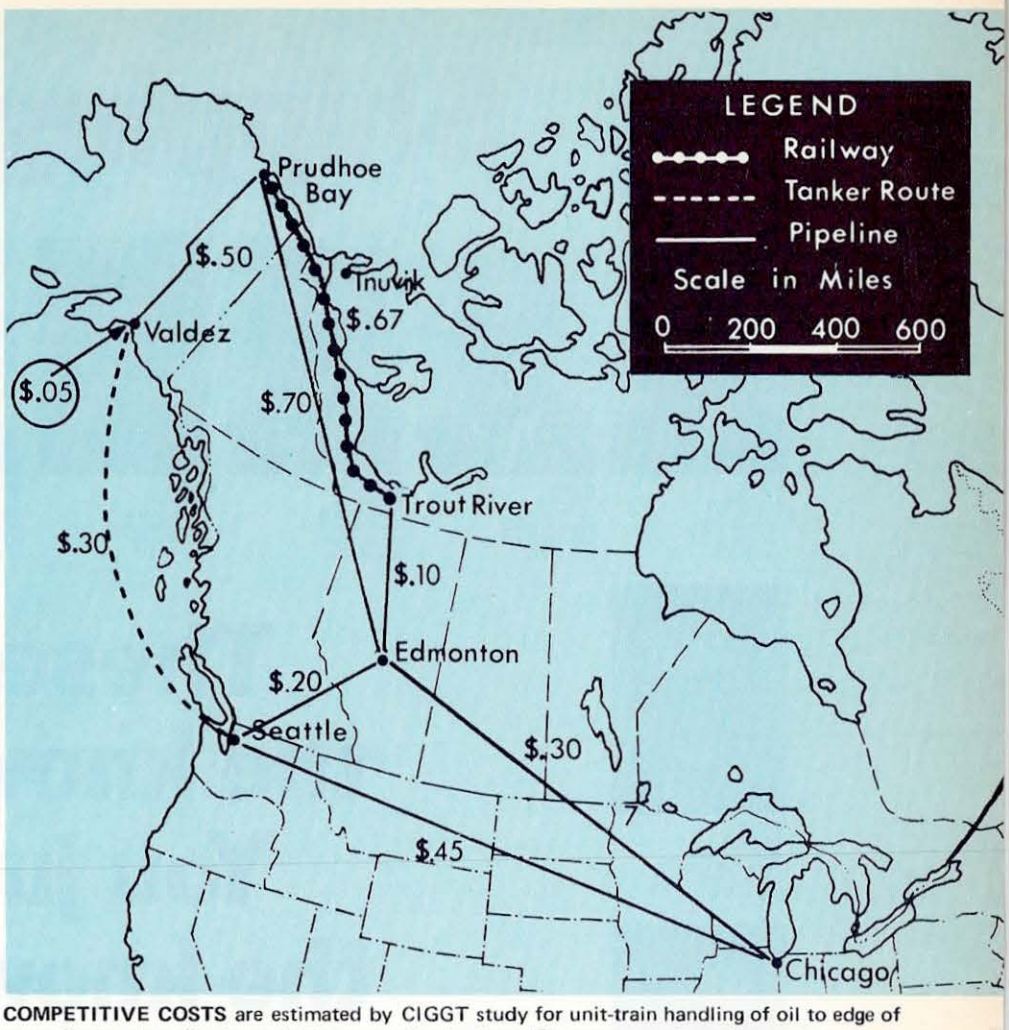
Rail haul proposed for Arctic crude oil

With pipe on site and no longer faced with a federal court injunction, Alyeska Pipeline Service Co. would seem about set to move ahead with its $2.7 billion oil transportation system for Alaska's North Slope oil. But environmentalists are still fighting the all-pipeline plan; and their hopes for upsetting it are buoyed by the fact that during the 28 months when Judge George L. Hart's injunction held up the laying of the hundreds of miles of pipe, two proposals have been made for rail transportation as an alternative to the pipeline.

The first plan, that of the Canadian Institute of Guided Ground Transport, is for moving Prudhoe Bay oil up Canada's Mackenzie River valley via a double-track railroad. The second, put forward by a consortium of U.S. consultants, envisages a 581-mile single-track railroad extending north from Nenana, on the Alaska Railroad. The Mackenzie line would deliver its oil into a pipeline at Trout River, in Canada's North West Territories, and this would, in turn, connect to the existing continental pipeline distribution system.

The all-Alaska rail proposal would call for unit oil trains to continue from the new line south over the existing (but upgraded) Alaska Railroad to Whittier for movement to the "lower 48" by ocean tanker. This system is estimated to cost in excess of $1.6 billion; the Mackenzie route is estimated at $2.4 billion. Both are said to make possible costs competitive with more traditional oil transportation modes.

● **Permafrost problem.** The North Slope plain is water laden in summer and permanently underlain by a frozen mix of silt and ice, in places 2,000 feet deep. This permafrost, the significant transmission distances, and the presence of a relatively unspoiled environment have raised serious engineering, economic, environmental, social and political problems. While a gas pipeline apparently can be constructed without seriously affecting the permafrost, the 160-degree F crude oil could rapidly thaw the ice-rich soil in which the pipe was placed. Environmentalists say this could quickly upset the region's delicate ecological balance.



COMPETITIVE COSTS are estimated by CIGGT study for unit-train handling of oil to edge of permafrost region. Crude would then move in pipelines. Figures are per-barrel costs.

Both rail proposals predict relatively little environmental impact from the building of heavy-duty railways. Says CIGGT: "Using the rail mode, a design approach is possible which minimizes the disturbance to the plant cover by using fills of well-drained materials to blanket and preserve the frozen condition of frost-susceptible soil material."

● **Unit trains.** To transport 2 million barrels of oil per day, quoted capacity of a 48-inch pipeline, CIGGT proposes 11,000 tank cars of 100-ton capacity. There would be 20 trains each way daily, each made up of 168 cars and powered by five 3,000-hp, six-axle locomotives. The Mackenzie's proposed locomotive ownership would be 360 units. An advanced communication and train control system would be installed. While the possibility of automation was considered, CIGGT has opted for operation of each train by a four-man crew.

The Alaska rail route proposes the movement of 1.25 million barrels of oil daily, also in unit trains moving at 60 mph. There would be 42 train movements every 24 hours over this line.

Capacity of either of the rail lines could be increased by adding rolling stock and expanding terminal facilities.

The injunction against pipeline construction was lifted when it was ruled that the Interior Department's nine-volume environmental impact statement satisfied a 1969 law. Three environmental groups indicated that they will appeal and it is expected the action will go to the Supreme Court. Alyeska Pipeline Service, a consortium of seven oil companies, has indicated it will do nothing "until we are finished with all litigation."

● **Another proposal.** Even if an Alaska oil railroad were not to be built, there has been a proposal of the Canadian government to extend the existing continental rail system northward through British Columbia to Dawson City in the Yukon. This proposed 1,000-mile, $400-million line would tap mineral and forest resources, according to the Canadian Northwest Transportation Study.

In recent years the steady expansion of the British Columbia Railway (former Pacific Great Eastern) has brought the railhead closer and closer to the British Columbia/Yukon border.

The Yukon study predicts that the Northwest "would be virtually transformed within two decades" by rail development and the region's population would more than double. ■

Shipping to, from

ATLANTA
R. O. Mullen
151 Ellis St. N.E.
Atlanta, Ga. 30303
(404) 659-6972/3
Telex: 54-2931

ATLANTA
D. W. Spicer
151 Ellis St. N.E.
Atlanta, Ga. 30303
(404) 659-6972/3
Telex: 54-2931

BOSTON
J. R. Fitzgerald
150 Causeway St.
Boston, Mass. 02114
(617) 523-1260
Telex: 94-6372

BOSTON
J. T. O'Leary
150 Causeway St.
Boston, Mass. 02114
(617) 523-1260
Telex: 94-6372

BOSTON
R. E. Porterfield
150 Causeway St.
Boston, Mass. 02114
(617) 523-1260
Telex: 94-6372

BOSTON
G. W. Roscoe
150 Causeway St.
Boston, Mass. 02114
(617) 523-1260
Telex: 94-6372

CHICAGO
C. A. Farm
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

DETROIT
T. D. Russell
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

These men have the know-how. You just need the know-who.*

DETROIT
J. H. Newitt
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

DETROIT
G. J. Wogan
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

DETROIT
E. J. Yurgen
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

DETROIT
W. H. Foster
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

DETROIT
L. J. LePage
660 Woodward Ave.
Detroit, Mich. 48226
(313) 963-7820
Telex: 23-5531

LOS ANGELES
J. H. Aylwin
610 S. Main St.
Los Angeles, Cal. 90014
(213) 622-9890
Telex: 67-7516

MILWAUKEE
A. W. Abegglen
231 W. Wisconsin Ave.
Milwaukee, Wis. 53203
(414) 271-0540
Telex: 2-6860

MILWAUKEE
M. Davis
231 W. Wisconsin Ave.
Milwaukee, Wis. 53203
(414) 271-0540
Telex: 2-6860

PHILADELPHIA
R. E. Phelps
1518 Walnut St.
Philadelphia, Pa. 19102
(215) 546-5839
Telex: 84-5124

PHILADELPHIA
L. J. Vorndran
1518 Walnut St.
Philadelphia, Pa. 19102
(215) 546-5839
Telex: 84-5124

PITTSBURGH
L. D. Blutas
436 Seventh Ave.
Pittsburgh, Pa. 15219
(412) 281-6375
Telex: 86-6131

PITTSBURGH
E. P. Krachala
436 Seventh Ave.
Pittsburgh, Pa. 15219
(412) 281-6375
Telex: 86-6131

PORTLAND, Me.
R. F. Lewis
232 St. John St., Rm. 121
Portland, Me. 04102
(207) 773-1293
Telex: 94-4424

PORTLAND, Me.
H. H. Chipman
232 St. John St., Rm. 121
Portland, Me. 04102
(207) 773-1293
Telex: 94-4424

PORTLAND, Ore.
S. M. Butts
621 S.W. Morrison St.
Portland, Ore. 97205
(503) 222-1697
Telex: 36-0521

or through Canada?

CHICAGO
C. L. Gans
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

CHICAGO
J. R. Grant
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

CHICAGO
E. B. Moore
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

CHICAGO
W. C. Weidenfeld
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

CHICAGO
S. Tischler
141 W. Jackson Blvd.
Chicago, Ill. 60604
(312) 939-3100
Telex: 25-4427

CINCINNATI
W. D. Fenstermacher
11750 Chesterdale Rd.
Cincinnati, Ohio 45246
(513) 771-0046
Telex: 21-4126

CLEVELAND
C. V. Franz
614 Superior Ave.
Cleveland, Ohio 44113
(216) 781-4616
Telex: 98-5536

And your who is near you.
There are CP Rail offices across the United States.
Each staffed with really professional transportation salesmen.
All part of the great Canadian Pacific team.
All anxious to help. They offer:

- All you need to know about rates, routing, border regulations ... you name it.
- Piggyback trains, container trains, unit trains, and even ordinary trains.
- Shipments that are traceable in 4 seconds, day or night, by our sleepless computers.

You can benefit with CP Rail's know-how. Just get to know *who*.
Check the nearest one. Phone, Telex or write, and put him to work.

**We couldn't picture all the who's, due to space limitations, so these are just the good looking ones.*

CP Rail

DES MOINES
R. C. Thompson
505 Fifth Avenue
Des Moines, Iowa 50309
(515) 282-1515
Telex: 47-8436

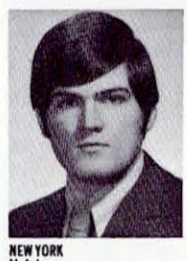
HOUSTON
K. M. Ryall
1509 Main St.
Dallas, Texas 75201
(214) 747-3311
Telex: 73-2453

MINNEAPOLIS
D. T. Cavanaugh
1412 Soo Line Bldg.
Minneapolis, Minn. 55402
(612) 339-7887/8
Telex: 29-0599

MINNEAPOLIS
D. C. Kopp
1412 Soo Line Bldg.
Minneapolis, Minn. 55402
(612) 339-7887/8
Telex: 29-0599

NEW YORK
T. J. Flynn
581 Fifth Ave.
New York, N.Y. 10017
(212) 759-4438
Telex: 12-5241

NEW YORK
G. M. L'Heureux
581 Fifth Ave.
New York, N.Y. 10017
(212) 759-4438
Telex: 12-5241



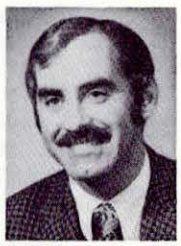
NEW YORK
M. A. Logan
581 Fifth Ave.
New York, N.Y. 10017
(212) 759-4438
Telex: 12-5241

NEW YORK
W. R. Winstanley
581 Fifth Ave.
New York, N.Y. 10017
(212) 759-4438
Telex: 12-5241

NEW YORK
E. L. Thomas
581 Fifth Ave.
New York, N.Y. 10017
(212) 759-4438
Telex: 12-5241

SAN FRANCISCO
R. C. Havlice
681 Market Street
San Francisco, Cal. 94105
(415) 421-5185
Telex: 34-0447

SAN FRANCISCO
K. P. McClanahan
681 Market Street
San Francisco, Cal. 94105
(415) 421-5185
Telex: 34-0447



SEATTLE
W. E. Jenkins
616 White Henry Stuart Bldg.
Seattle, Wash. 98101
(206) 622-8380
Telex: 32-596

SPOKANE
W. D. Reeves
717 Old Nat'l Bank Bldg.
Spokane, Wash. 99201
(509) 747-4876
Telex: 32-6470

ST. LOUIS
J. T. Laws
611 Olive St.
St. Louis, Mo. 63101
(314) 621-4768
Telex: 44-804

ST. LOUIS
J. R. Rehmer
611 Olive St.
St. Louis, Mo. 63101
(314) 621-4768
Telex: 44-804

ST. LOUIS
C. D. Fulton
611 Olive St.
St. Louis, Mo. 63101
(314) 621-4768
Telex: 44-804

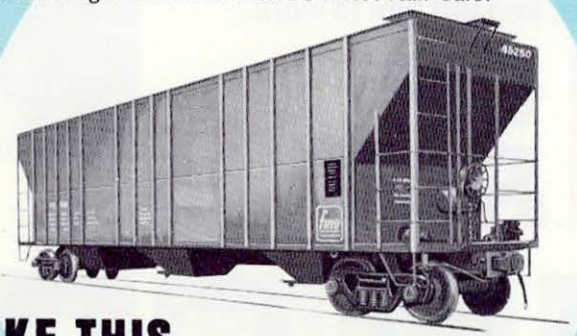
Circle 23 on coupon page 69

If... GUNDERSON, INC.

had been around to design and build Lighthouses...

They would have constructed The Pharos Lighthouse of Egypt . . . A wonder of the ancient world!

BUT... GUNDERSON, INC., is here today designing and building the modern world's finest Rail Cars!



LIKE THIS 100 Ton – 4750 cu. ft. Covered Hopper Car – Built in either steel or aluminum. This car is just one of the many car designs – developed and fabricated by the largest freight car builders in the West!

For the World's Finest Rail Car Craftsmanship.

MEMBER RPI RAILWAY PROGRESS INSTITUTE

fmc

GUNDERSON, INC.
4700 N.W. Front Street
Portland, Oregon 97208
Ph: (503) 228-9281
A Subsidiary of FMC Corporation

fmc CORPORATION BUILT BY GUNDERSON, INC. PORTLAND, ORE.

WELDING THE WEST TO THE WORLD

Circle 24 on coupon page 69

ICG: Long courtship, whirlwind marriage

What Illinois Central Industries has joined together, would the U.S. Supreme Court put asunder?

That's one of the questions that surfaced after Illinois Central and Gulf, Mobile & Ohio topped off a lengthy courtship with a whirlwind marriage.

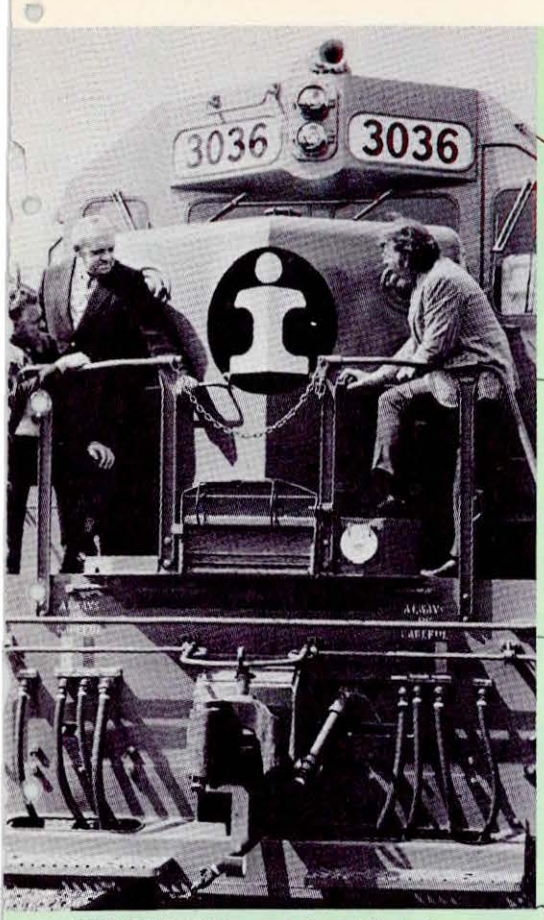
Put most simply, IC/GM&O won a favorable judicial decision Aug. 9 and—unhampered by any order to stay merger pending a possible appeal—consummated the merger the following day. This left the protestants—Missouri Pacific and Kansas City Southern—with a real problem. In later court action, they were unable to get what would have by then amounted to an after-the-fact stay. So, a trip to the Supreme Court seems inevitable—on the merger itself and/or on the issue of Union Pacific stock involvement with IC Industries, an involvement which has been a main element in Mopac's protest.

● **Four-year process.** Meanwhile, the 9,400-mile Illinois Central Gulf is a fact, operating as a wholly-owned subsidiary of IC Industries with Alan S. Boyd as president and chief executive officer, Glen P. Brock as chairman and William B. Johnson as chairman of the executive committee. Thus, IC and GM&O have apparently finished what they started in May 1968 with their application to the ICC. They won an examiner's favorable ruling in mid-1970 and got the Commission's approval last Dec. 28.

Though ICG is not a merger of the proportions of a Burlington Northern or a Penn Central, the statistics are nonetheless impressive: Revenues last year of $458 million, carloadings at close to the two-million mark, 19,500 employees, 1,025 locomotives, 61,665 freight cars, total assets of almost $1.2 billion.

Throughout the case, IC and GM&O stressed the competitive problems facing them, and the service improvements that would be possible through merger. Their merger brief to the ICC stated:

"The Mississippi Valley region has the greatest concentration of river and canal service and pipeline service of any area in the United States. Operating on a north-south axis, total length of which is less than 1,000 miles, applicants also face extensive motor-carrier competition. The two railroads operate in the



NEW EMBLEM is a redesign of that of former IC. Mechanical department quickly restyled one unit and had it checked by chief mechanical officer and road's design consultant.

NETWORK of lines follows Mississippi River valley from Gulf to Wisconsin. ICG will expedite its schedules by utilizing segments of both its predecessors' lines.

most highly competitive region of the nation with respect to intermodal competition, considering water, motor and pipeline competition as a whole."

● **Single-line service.** ICG sees a number of service improvements now possible. For instance, there will be single-line service from former IC points to Kansas City, Montgomery and Mobile and from former GM&O points to such cities as Omaha, Sioux City, Albert Lea, Indianapolis, Louisville and Shreveport.

Segments of IC and GM&O lines can also be combined for more direct routing. As one example: Traffic from Chicago to points south of the Ohio River will move over the former IC to Jackson, Tenn., and then switch to former GM&O to Montgomery and Mobile. The expected reduction in transit time: 24 hours.

ICG will do the usual things merging roads do to make one out of two—aided by the fact that there are really no basic incompatibilities between the plants of the two carriers. The extensive central communications and data-processing system built up by IC in recent years will be extended to former GM&O points. Power and equipment will be pooled—and it is in increased efficiency in equipment utilization that ICG sees the main benefits for the new property.

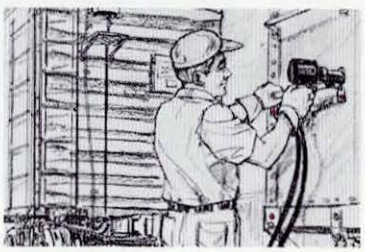
● **Significant savings.** Savings are expected to be significant: In deciding the case, the ICC noted that merger would strengthen IC and GM&O by "increasing the pre-tax net income by $16 million annually."

Top officers of ICG, predictably, were exuberant in their comments following the court victory and consummation of the merger. But Glen Brock added this observation: Merger "will be accomplished on a carefully-planned basis for the best interests of the new road's employees and shippers. We've learned a lot about how to merge and how not to merge by others' painful experience."

Unfortunately, though, it appears that there's been one noteworthy casualty from merger. The imaginative IC logo—the split rail, dotted-I in a circle—just didn't lend itself to the addition of a "G" somewhere. So ICG will apparently have to make-do by pulling the rail together and centering the dot. Which still is probably a small price to pay for the benefits merger promises. ■

Why do the same job twice?

Turn RIP shop make-do repairs into chargeables with HUCK FASTENING SYSTEMS



There's no need to tie-up cars twice to make highly reliable permanent repairs. With the superior capabilities of Huck Fastening Systems your RIP shop can turn out time-saving one-stop repairs that meet DOT and AAR code specifications. Costly make-do jobs and unnecessary delays in transit are eliminated. More repair jobs become chargeable to convert overhead to income. Huck Fasteners can be easily installed by non-skilled workers. The system includes a portable Powerig for outdoor repair jobs. Eliminate job duplication. Cut costs and increase profitability with Huck Fastening Systems. Contact your nearest Huck representative or write or call:
Huck Manufacturing Company, 2500 Bellevue Ave., Detroit, Michigan 48207, telephone 313/923-4500.

In Canada: 130 Skyway Ave., Rexdale, Ontario, Canada, telephone 416/677-2800.

Portable HUCK Fastening Systems Provide:
- Easy, one-stroke on-the-spot permanent fastening
- Excellent pull-together, high clamping force • Uniform tension always • No torquing • Installation by non-skilled workers
- Chargeable jobs that can be billed

A self-contained tool system—RIP CART™ equipped with the three fasteners used most commonly in transit repairs.

Send for our new 50-page Industrial Fasteners Catalog today.

HUCK MANUFACTURING COMPANY
2500 BELLEVUE AVE., DETROIT, MICHIGAN 48207
TELEPHONE: 313/923-4500

130 SKYWAY AVE., REXDALE, ONTARIO, CANADA
TELEPHONE: 416/677-2800

Circle 25 on coupon page 69

One reason why 80% of all plastics shipped in bulk travel in ACF Center Flow cars.

Every ACF Center Flow car provides the utmost in sanitation. Because we know even a little residue can contaminate an entire shipment.

Center Flow's clean-bore design eliminates the center sill as well as ledges and corners that cause hang-up. And thereby prevents contamination from residue.

Of course, plastics aren't the whole Center Flow story. In fact, with over 2000 possible design combinations, there is hardly a dry bulk lading the car can't carry.

And carry more of. Because its unique pear-shaped interior makes fuller use of cube. And with models from 2970 to 5700 cubic feet to choose from, you can maximize payload on products of any density.

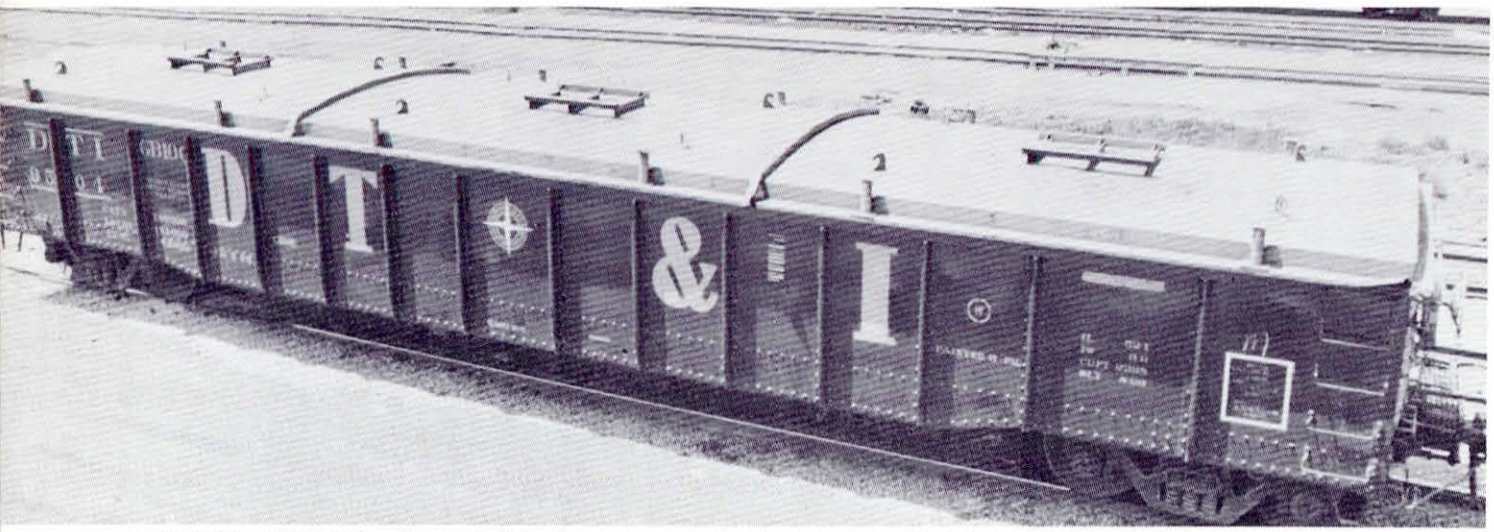
Center Flow handles easier, too. With a variety of center-line hatches and outlets that simplify loading and unloading.

ACF's Center Flow car. The cleaner, simpler, faster, more versatile way to ship dry bulk.

ACF Industries, Shippers Car Line Division, 620 N. Second Street, St. Charles, Mo. 63301.

ACF INDUSTRIES

MEMBER RPI RAILWAY PROGRESS INSTITUTE



CUSHIONED GONDOLAS with new bulkheads are seen as means of recapturing traffic in flat steel sheets.

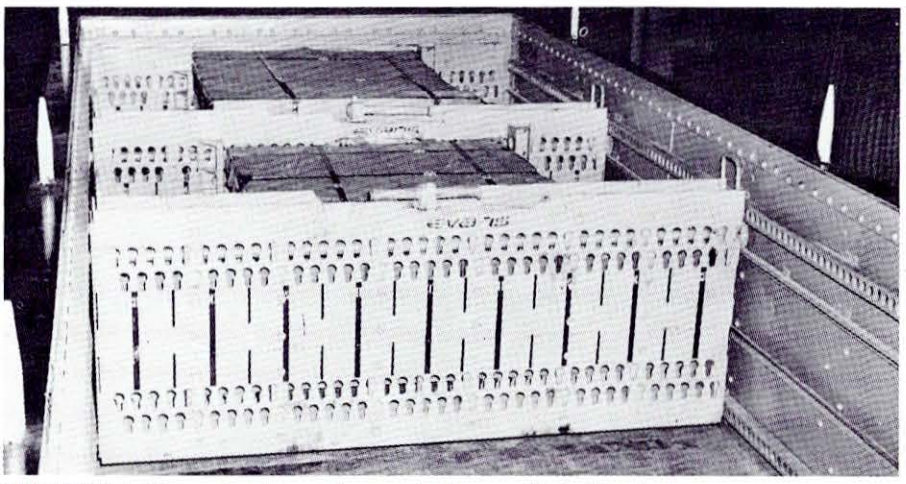
Brackets prevent lateral load shift

Another approach to increasing the competitiveness of rail transportation for flat sheet steel has been developed by Detroit, Toledo & Ironton. By October, DT&I is scheduled to have in service 40 cushioned, covered gondola cars with special adjustable bulkheads that prevent lateral, as well as longitudinal, movement of heavy bundled sheets.

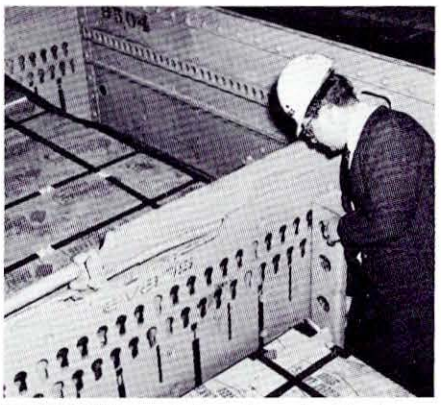
Key to this new arrangement is a combination of the side sway brackets and spacers which fit into key slots on the steel bulkheads. The load control is the product of a cooperative effort of Great Lakes Steel and DT&I, working through H.E. Beeson, assistant superintendent of equipment. Actually a number of designs were evaluated prior to the equipping of a prototype car.

● **No damage in 40 trips.** Results with this experimental unit were so good that DT&I was soon retrofitting nine more gondolas and recently placed an order with Greenville Steel Car for an additional 30 cars which are to be fitted with the special bulkheads. These cars have made more than forty loaded trips from Great Lakes Steel without a single incident of damaged lading. They have also moved 90-ton loads from McLouth Steel, Armco, Bethlehem and Weirton to a series of destinations with no reports of damage.

V.M. Malanaphy, DT&I director of market research and planning, points out that although rail rates on bundled sheet steel are gneerally lower than those of motor carriers, much of this traffic has been diverted to highways. He says this is attributable to the high incidence of damage, compounded with the higher costs of materials handling and load preparation. The goal of the new arrangement was elimination of dunnage required in conventional gondolas. Predicts Malanaphy: "It is possible for the steel industry to realize significant transportation savings and damage-free shipments by rail as a result of our newly developed car designed specifically to handle sheet steel in bundles."



KEYSLOTS hold sway brackets and spacers in the movable bulkhead.



BRACKET is located snugly against load.

● **Recapturing lost traffic.** He feels that the car should permit railroads to capture a profitable segment of lost traffic as other lines acquire similar equipment. DT&I utilizes a 100-ton 52½-ft gondola design with four Evans movable bulkheads, a Republic composite wood/steel floor and FreightMaster 10-inch-travel end-of-car cushioning units. Ends, as well as bulkheads, are slotted to permit the insertion of the side-sway brackets which prevent any lateral shifting of the load. There are 16 side-sway brackets and 8 spacers for each car. Sides and ends are 4½-ft high.

The 30 cars now under construction at Greenville will be moved to DT&I's Jackson, Ohio, shop for application of the Evans interior equipment and the Shunk covers. They will then be painted and are all expected to be in service by Oct. 1.

Introducing The Custom Freights.

Short, fast trains—built to order for your unique shipping problem.

Time flies.

We introduced short, fast trains back in '63 to help customers who encountered special shipping challenges.

Now, there's a bandwagon. But we're still leading the band. Because we came up with the innovation in the first place, we've had more time to perfect it.

Now, our foresight shows. When you have a vital shipment, we can hook up and deliver the goods faster, more efficiently. For your special cargo, we have the special car to handle it. With better dispatching. Faster turnarounds. Softer rides. Less time in-transit.

That's what Rio Grande Custom Freights are. And they're just a fraction of the total customer services we offer.

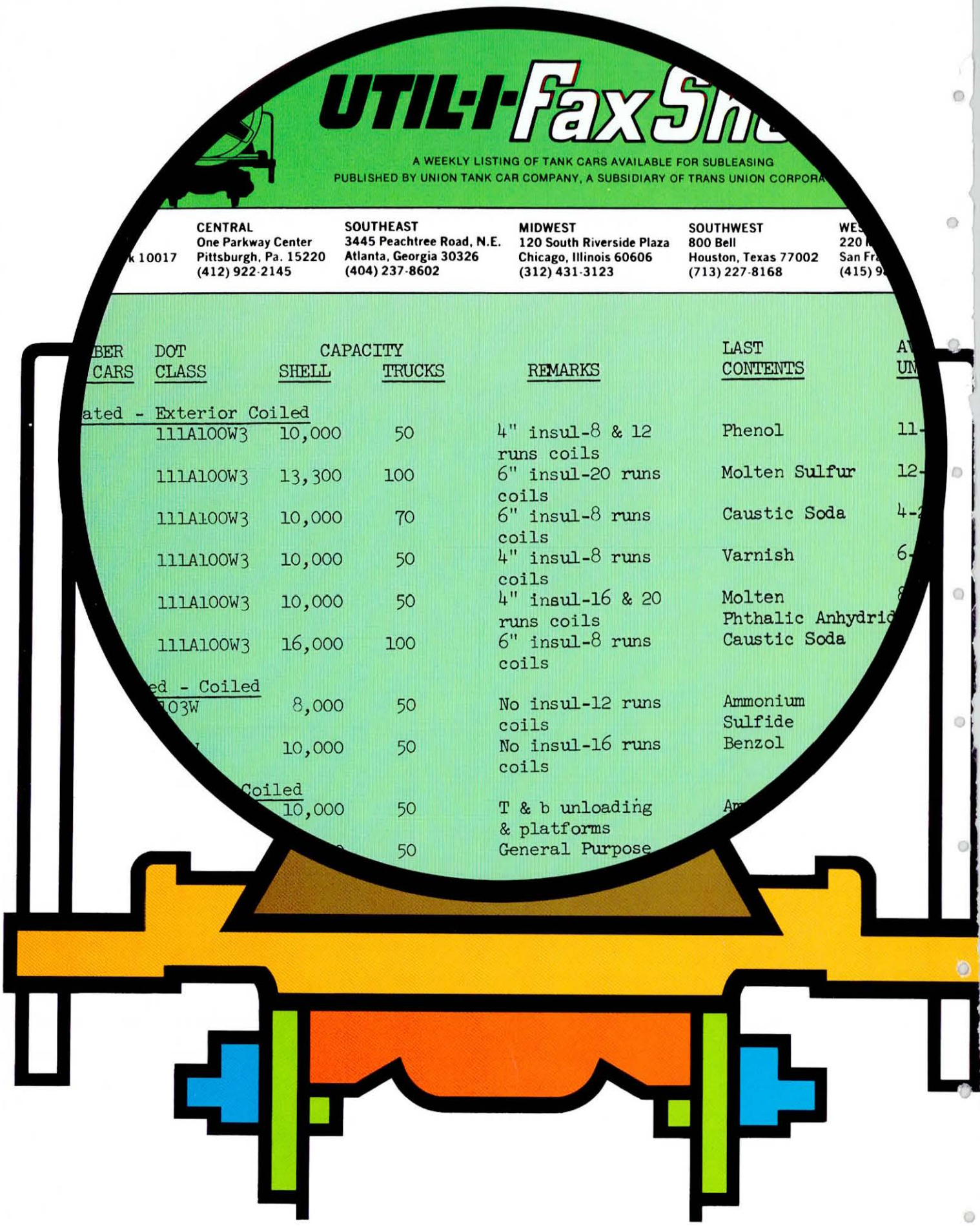
So next time you have a knotty shipping challenge, let us help you unravel it.

With our short, fast Custom Freights—another example of the Grande way of doing things.

Rio Grande
the ACTION road

The Denver & Rio Grande Western Railroad

Circle 26 on coupon page 69


UTIL-I-Fax Sh
A WEEKLY LISTING OF TANK CARS AVAILABLE FOR SUBLEASING
PUBLISHED BY UNION TANK CAR COMPANY, A SUBSIDIARY OF TRANS UNION CORPORA
CENTRAL
One Parkway Center
Pittsburgh, Pa. 15220
(412) 922-2145
SOUTHEAST
3445 Peachtree Road, N.E.
Atlanta, Georgia 30326
(404) 237-8602
MIDWEST
120 South Riverside Plaza
Chicago, Illinois 60606
(312) 431-3123
SOUTHWEST
800 Bell
Houston, Texas 77002
(713) 227-8168
(415) 9
BER CARS
DOT CLASS
CAPACITY SHELL
CAPACITY TRUCKS
REMARKS
LAST CONTENTS
ated - Exterior Coiled
111A100W3 10,000 50 4" insul-8 & 12 runs coils Phenol
111A100W3 13,300 100 6" insul-20 runs coils Molten Sulfur
111A100W3 10,000 70 6" insul-8 runs coils Caustic Soda
111A100W3 10,000 50 4" insul-8 runs coils Varnish
111A100W3 10,000 50 4" insul-16 & 20 runs coils Molten Phthalic Anhydrid
111A100W3 16,000 100 6" insul-8 runs coils Caustic Soda
ed - Coiled
103W 8,000 50 No insul-12 runs coils Ammonium Sulfide
10,000 50 No insul-16 runs coils Benzol
Coiled
10,000 50 T & b unloading & platforms
50 General Purpose

Get moving with the "Green Sheet"

Free UTIL·I·FAX Sheets show tank cars available for short-term subleasing.

Any tank car user may benefit from UTIL-I-FAX. This computerized system helps UTLX lessees improve car utilization and reduce distribution costs. It also provides a reliable source for anyone interested in obtaining cars for short periods of time.

UTLX lessees who have idle cars due to seasonal inactivity, or any other reason, may list available cars in the weekly UTIL-I-FAX sheets, at no cost. These listings are mailed to hundreds of tank car users.

The UTIL-I-FAX system takes care of all paper work—legal, credit, insurance —during the sublease period. The original lessee's rental charges stop for the term of the sublease, and there are no brokers' fees.

Anyone can use the FAX sheets as a quick reference to short-term UTLX cars. All of Union Tank's facilities, experience, reliability, integrity and know-how can be counted on with each short-term agreement.

Write for complete information about the UTIL-I-FAX system or call the nearest Union Tank Car Company District Office.

UNION TANK CAR COMPANY

An Affiliate of Trans Union Corporation, 111 W. Jackson Blvd., Chicago, 60604

Circle 27 on coupon page 69

ELECTRO-MOTIVE 50 YEARS OF POWER

Electro-Motive's dynamic track record is under control . . . with Woodward

For fifty years, Electro-Motive Division has been building railroad motive power totaling over 78 million horsepower. For nearly forty of those years, this leading prime mover manufacturer has looked to Woodward for peak performance governors to maintain constant engine speeds under changing load conditions. • Woodward governors and fuel controls are engineered for a broad scope of diesel and gas turbine engine applications. Whether you power or run a railroad, a ship line or an oil rig, contact us early when we can be of most service in your planning.

Union Pacific Railroad photo

Woodward Governors for aircraft power plants and propellers; gas turbine and/or diesel prime movers for standby, peaking, and on-site power needs; hydro-electric power.

WOODWARD SERVICE

WOODWARD GOVERNOR COMPANY Ft. Collins, Colorado, U.S.A., Phone (303) 482-5811;
Main Office: Rockford, Illinois, U.S.A. • Tokyo, Japan; Sydney, Australia • Subsidiaries; Slough, England; Hoofddorp, The Netherlands; Montreal, Canada

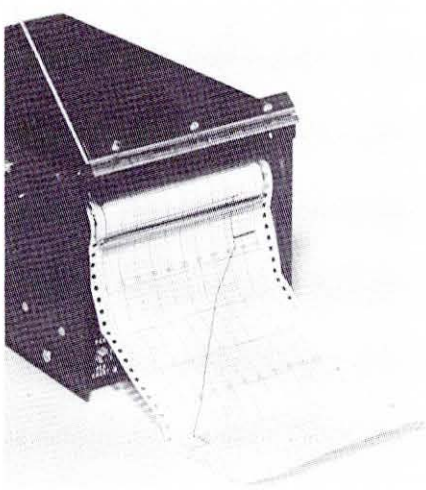
ET-222

New Products Report

Temperature monitor can be checked constantly

Transitemp, mounted on the front of a trailer in the driver's field of rear vision, constantly monitors the trailer's interior temperature and provides the early warning needed by terminal personnel. Proper temperatures are indicated by a steady green glow. If the temperature exceeds either high or low range limits, the green lamp is extinguished and the large amber light flashes a vivid warning. Interface Engineering's Models 632 (2 ranges) and 633 (3 ranges) permit rapid change in set points for different types of cargo. Transitemp is an excapsulated, precision microelectronic set-point thermometer immune to weather, shock and vibration. It operates from 12 volts d-c.

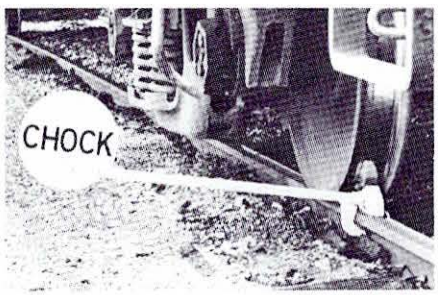
Circle 60 on reader service card



Remote bulk weight records deter theft

Chek-A-Load is an anti-pilferage system designed to guard against improperly weighed trucks. A remotely located indicator tells at a glance if the truck was fully loaded, or if loading continued after the final weight was entered. The system provides a permanent record of loading/weighing transactions and is also a psychological deterrent. B&R Systems & Controls' Chek-A-Load is used where loading of bulk materials occurs, and can be the basis of invoicing and inventory management.

Circle 61 on reader service card



Wheel chock features high visibility

A Portable Flag-Type Wheel Chock adds quick visibility to an ability to assure secure blocking for car wheels. Western Cullen's all-steel chock is quickly attached without getting under the car. The assembly is placed on the rail head and the extension arm lowered to horizontal position. The large diameter warning sign is finished in bright m/w yellow.

Circle 62 on reader service card

Mobile fax unit works on VHF radio

The Alden Model 400 mobile facsimile system operates automatically and unattended at 225, 450, 900 rpm/122 1pi (lines per inch). Completely unattended operation means that the receiver can remain in standby mode until activated by the transmitter. Any graphic material up to 3-9/16 in. wide by any length, including news-

FOR FAST INFORMATION ON 1 to 3 ITEMS ONLY USE THIS
EXPRESS CHECK-OUT CARD
PLACE NUMBER OF ITEM IN CIRCLE
○ ○ ○
AND AIRMAIL DIRECT TO PUBLISHER TODAY
NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
TELEPHONE _____
Inquiries can be processed only if title and company are shown.
8/28/72

350 Broadway, N.Y., N.Y. 10013 READERS' SERVICE (Att. J. Meyer)
Circle numbers for more information about advertisements, products and services.
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60
61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90
LIMIT: FIVE NUMBERS
☐ PLEASE SEND INFORMATION ABOUT SPECIAL RAILWAY AGE SUBSCRIPTION PLAN FOR YOUR EMPLOYEES AND CUSTOMERS.
NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
Inquiries can be processed only if title and company are shown.
8/28/72

paper type as small as 5 point, can be transmitted and received. Once transmission is completed, the receiver reverts to standby mode. A 3-in. x 5-in. card can be transmitted in approximately 40 seconds to 2.7 minutes, depending on model.

Model 400 receiver weighs only 17 3/4 lb. It operates on 12-volt dc power drawing 15 operational watts and only 3 watts in the standby mode.

Circle 63 on reader service card

NEW LITERATURE

PASSENGER SHELTER. A Melrose Displays, Inc., brochure describes a new modular passenger shelter based upon a framing system that allows pre-fabrication in any size, from full-length railroad platform down to a corner bus stop. It ships flat for easy on-the-spot assembly.

Circle 70 on reader service card

SAFETY REGULATIONS. Midwest Corp. has issued a brochure entitled "Rails and OSHA" listing specifically the ways in which compliance is required with the Occupational Safety and Health Act and gives the appropriate Department of Labor guidelines. A selection of the firm's products which satisfy Federal requirements is displayed and described.

Circle 71 on reader service card

RAIL CAR WEIGHING. A brochure from Ramsey Engineering Co. gives complete technical data and specifications about CN-R-Weigh, an electronic in-motion rail car weighing system.

Circle 72 on reader service card

SOIL BINDER. Phillips Petroleum Co. has released a brochure about Petroset SB emulsion, a soil binder protecting against erosive effects of wind and water. Among potential uses cited by the brochure is the prevention of wind loss of fines during rail shipments in open gondolas.

Circle 73 on reader service card

POWER CELL. A bulletin from the Rail Transportation Department of ESB, Inc.'s Exide Power Systems Division describes a new primary cell in which the electrolyte turns a distinctive luminescent green when about 80% of the rated capacity has been expended. Called the R.S.V.P. (for railway signal visible power), the cell is especially suited for railroad track-circuit applications.

Circle 74 on reader service card

WASHING UNIT. A brochure from Aero Wash Systems, Inc., features information on the 1973 high-pressure, mobile washing unit called Model 500. Aero Wash originally designed and produced a mobile washing system for aircraft and other equipment. The concept has been expanded into a washing unit servicing all types of transportation.

Circle 75 on reader service card

SNOW REMOVING. Little Giant Products' new brochure describes the firm's complete line of snow removal equipment. The equipment is for clearing access roads, parking lots and dock areas.

Circle 76 on reader service card

POLLUTION CONTROL. A 16-page booklet from Nalco Chemical Co. describes pollution control products and services available to the company's clients throughout the U.S. It illustrates and gives information on a variety of specialty chemicals and consulting services, covering all aspects of air, land and water pollution control.

Circle 77 on reader service card

WEIGHING SYSTEMS. Features and advantages of the Series 4000—a new, totally solid-state automated electronic weighing system—are available in a brochure issued by the Streeter Amet Division, Mangood Corp. The system—providing total capability for weighing all kinds of transport vehicles—is designed for, among others, all industries having occasion to weigh railroad cars, trains, highway vehicles, lift trucks, other industrial vehicles and containerized cargos.

Circle 78 on reader service card

END-OF-AXLE-DRIVE. Dayco Corp. has announced a brochure featuring its newly developed End-of-Axle Alternator Drive for railway applications. The drive fits all cabooses equipped with roller bearings, installs quickly on the side frame of the truck, eliminates drive misalignment and requires no customizing.

Circle 79 on reader service card

PLACE AIRMAIL STAMP HERE

RAILWAY AGE
350 Broadway
New York, N.Y. 10013

ATTENTION:
R.G. LEWIS, PUBLISHER

AIR MAIL

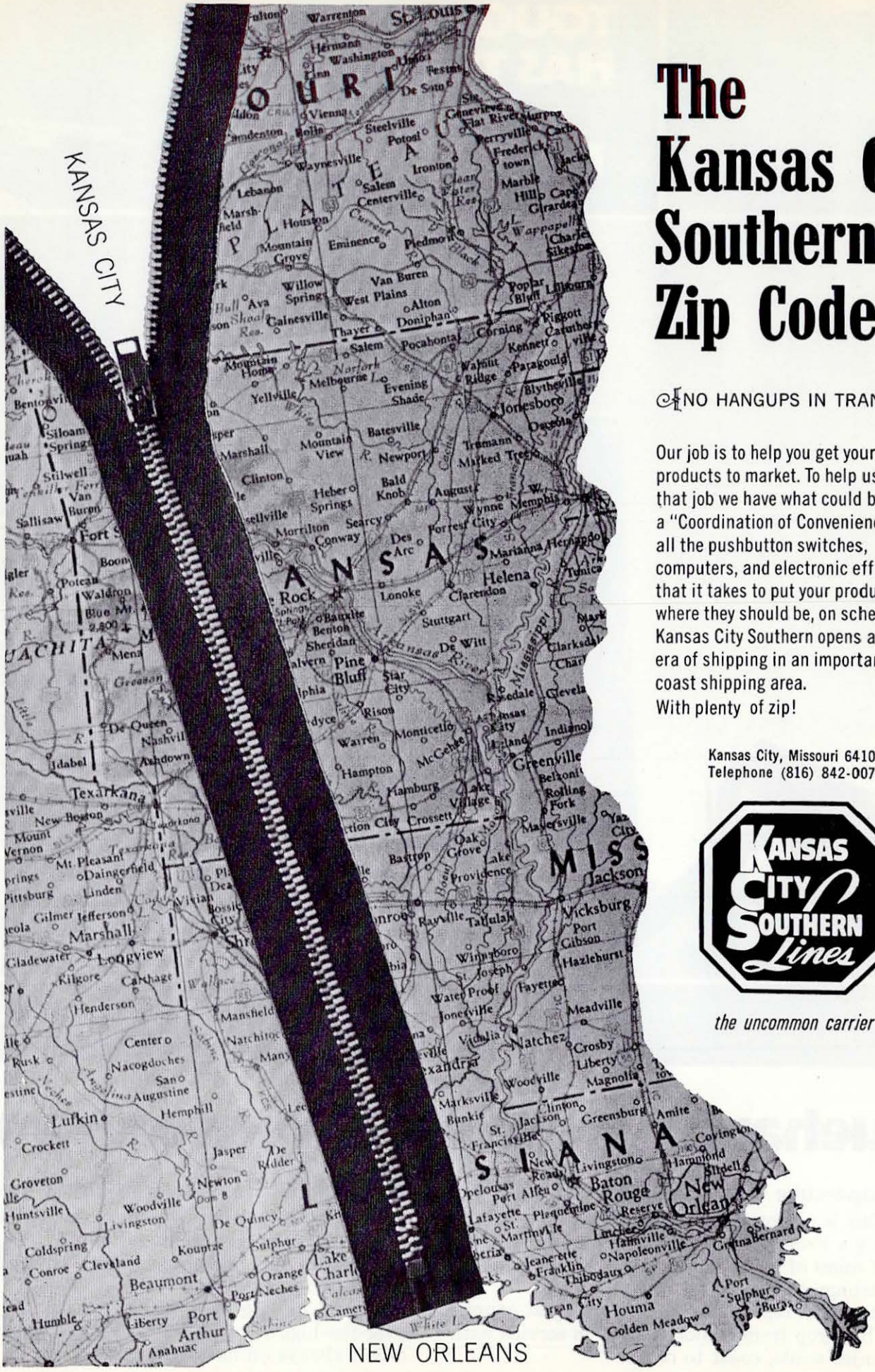
FIRST CLASS
PERMIT NO. 153
NEW YORK, N.Y.

BUSINESS REPLY MAIL
No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY

RAILWAY AGE
350 Broadway
New York, N.Y. 10013

ATTENTION:
J. MEYER



The Kansas City Southern Zip Code:

NO HANGUPS IN TRANSIT

Our job is to help you get your products to market. To help us do that job we have what could be called a "Coordination of Conveniences": all the pushbutton switches, computers, and electronic efficiencies that it takes to put your products where they should be, on schedule. Kansas City Southern opens a new era of shipping in an important Gulf coast shipping area.
With plenty of zip!

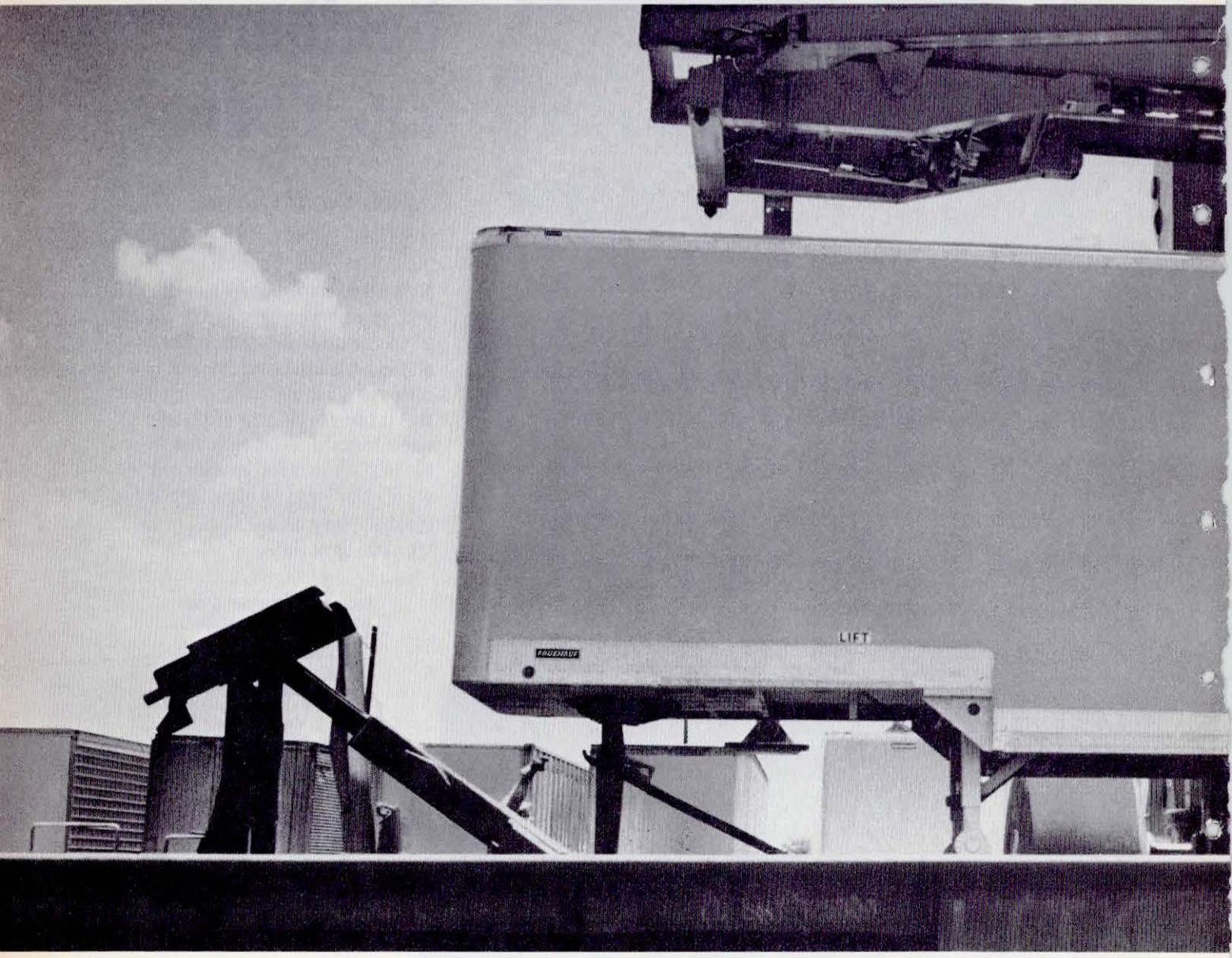
Kansas City, Missouri 64105
Telephone (816) 842-0077

KANSAS CITY SOUTHERN Lines

the uncommon carrier

Circle 29 on coupon page 69

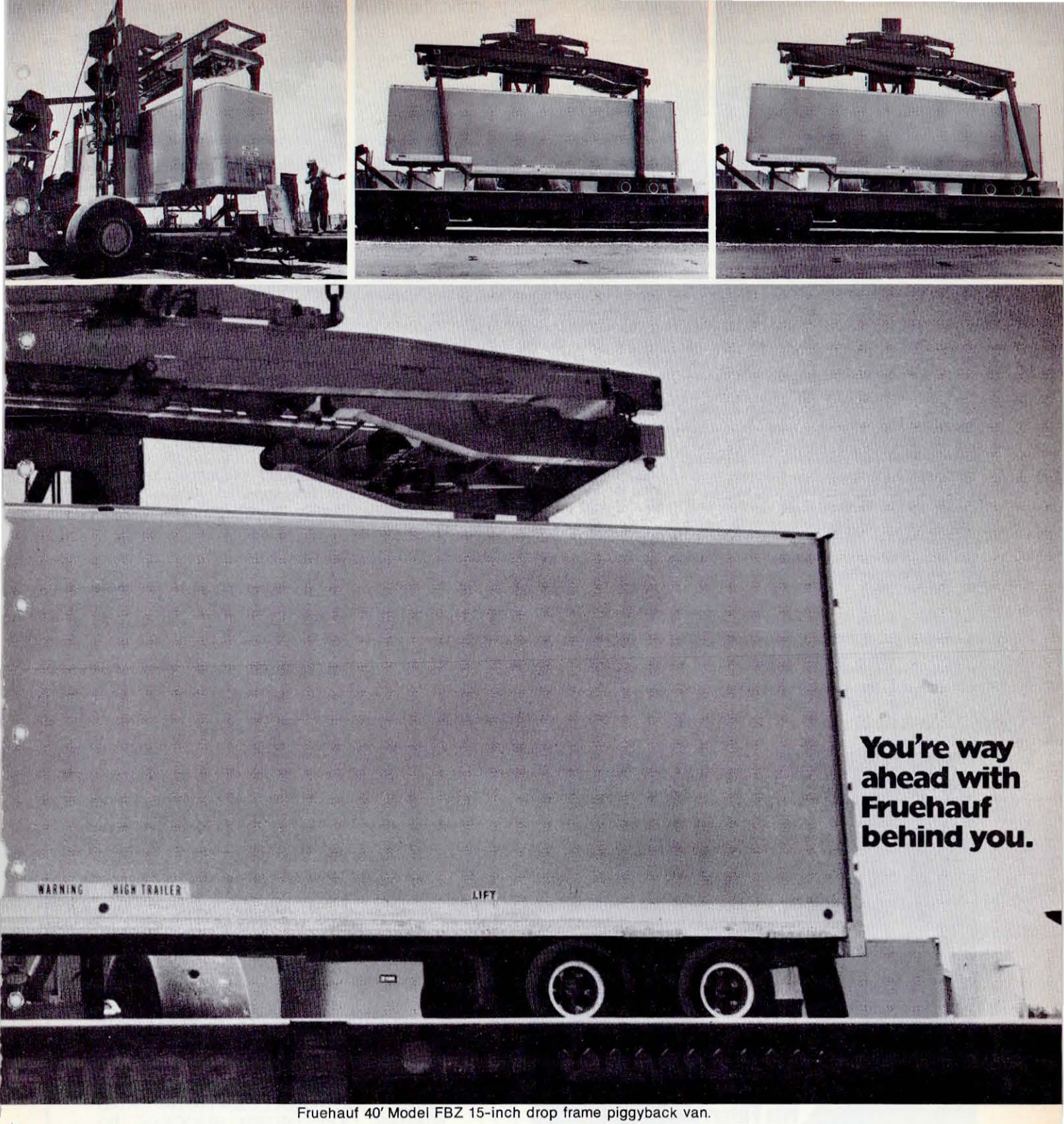
THE TOUGH ONE HAS TOUGH BIG BROTHERS



Fruehauf Supercube Z-vans give you

Supercube — and super tough, too.
This is no converted furniture van.
It's a Fruehauf Z-van, proved in millions of miles of T.O.F.C. service.
Strongest front end in the industry.
Strongest rear end. And the strongest coupler.
This drop frame model is now in service with major roads, coast to coast.

With our 15″ drop, you can circus load.
All Fruehauf Z-vans are engineered from the ground up for piggybacking. So our 15″ drop frame Supercube model has the clearance you need for drive-on loading. It also mounts 8.25 x 15 tires, 12-ply rated for over-the-highway capability. Piggyback vans aren't always on flatcars.



Fruehauf 40′ Model FBZ 15-inch drop frame piggyback van.

over 3000 cubic feet of payload.

How much more cube can you use?
Our Supercube Z-van, with the 15″ drop, gives you over 3000 cubic feet of usable payload capacity. It's a full 13′6″ high. You can load more, and more kinds of loads than before. A popular option: our super strong logistic posts, strong enough to double-deck.

Specs and options, financing and leasing.
All details are yours for a phone call to your local branch. Or write Fruehauf Division, Fruehauf Corporation, 10942 Harper Avenue, Detroit, Michigan 48232.
Fruehauf — the Total Transportation people.

TOTAL TRANSPORTATION

Circle 30 on coupon page 69

People in the News

ASSOCIATION OF AMERICAN RAILROADS.—Hugh M. Robertson appointed to the newly created post of director, Communication & Signal Section, Operating-Transportation Division, Operations and Maintenance Department, Washington, D.C., effective Sept. 1. Mr. Robertson was formerly assistant to superintendent of communication, **Union Pacific.**

Jack C. Hindman named executive director, Freight Claim Division, Chicago, succeeding **W.F. Paden,** retired. Mr. Hindman has been secretary of the division since Jan. 1961.

John A. Goodwin named assistant director of special equipment utilization, Car Service Division, Washington, succeeding **J. Frank Reilly,** retired after 41 years of railroad service, including 31 years with the AAR. **Robert D. DeLoach,** transportation inspector, New Orleans, succeeds Mr. Goodwin as assistant district transportation officer, Minneapolis. **Thomas H. Garcia, Jr.,** assistant manager of shipper relations, named to the newly created position of project officer, Car Service Division, Washington. **Raymond A. Luecht,** transportation inspector, Chicago, succeeds Mr. Garcia.

BOSTON & MAINE.—H.E. Ring has resigned as chief operating officer. **Fred L. Estey,** general superintendent transportation, promoted to general manager transportation. Mr. Estey, as well as **H.B. Berkshire,** chief engineer; **W.H. Chaplin,** chief mechanical officer; **V.B. Curran,** director of security and freight claims; and **H.F. Vaughan,** director of safety and fire protection, will report to the chief executive officer until the office of chief operating officer is filled.

CANADIAN NATIONAL.—G. Fournier, superintendent transportation, Montreal Area, appointed operations manager, Champlain Area, Montreal, succeeding **J.A. Boutin,** transferred to the Quebec Area at Quebec, to replace **J.R. Lagace. J.D. Rochette,** trainmaster (special duties), St. Lawrence Region, appointed superintendent freight, Montreal Area, succeeding **R.A. Martel,** appointed superintendent transportation, Montreal, succeeding Mr. Fournier.

J.M. Fuller, comptroller, Montreal Area, appointed area financial officer, St. Lawrence Region. Mr. Fuller will also be comptroller, **Central Vermont.** Abolished positions of comptroller, Montreal and Champlain areas.

R.L. Gray, assistant chief engineer-maintenance, system, Montreal, promoted to chief engineer. **R.A. Fisk,** regional chief engineer, Edmonton, Alta., succeeds Mr. Gray.

K.W. Landers, assistant general superintendent equipment, appointed manager, Concord/Conport express & intermodal complex at Toronto.

H.R. Norman, manager car distribution, Montreal, appointed marketing services officer, Great Lakes Region, Toronto.

R.B. Ferrier, superintendent transportation, London, Ont., appointed manager, accident prevention and safety, Great Lakes Region, Toronto.

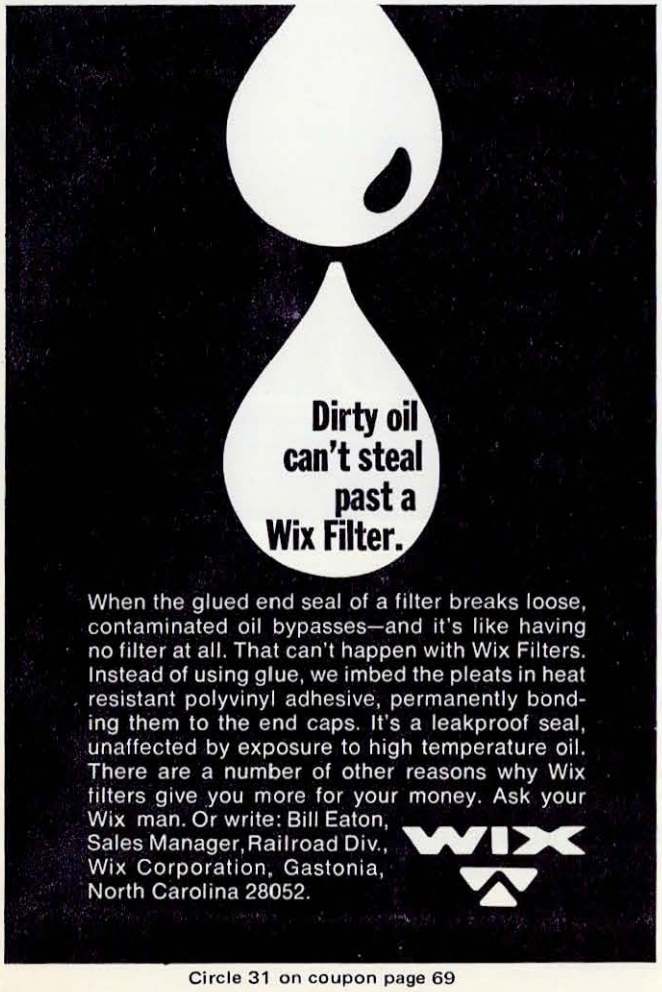
Kenneth J. Cawkell, freight sales manager, Edmonton, appointed manager of freight sales and service, Atlantic Region, Moncton, N.B., succeeding **George A. Thomas,** retired after 47 years of service.

CHICAGO SHORT LINE.—Richard W. Casey elected chairman and **W. James Betz,** president of this subsidiary of **Youngstown Sheet & Tube Co.,** at Chicago. Mr. Casey fills a new post. Mr. Betz, vice president of the Short Line since 1968, succeeds **Donald S. Day,** who recently retired as president of the Short Line and as vice president-traffic, Youngstown Sheet & Tube Co.

DELAWARE & HUDSON.—Thomas W. Eagan elected comptroller, Albany, N.Y. **Joseph E. Keenan,** Comptroller and **John N. Evanoff,** assistant comptroller, resigned July 24.

Paul V. Quinn appointed district sales manager, Philadelphia, Pa., succeeding **Arthur E. Olson,** transferred to Chicago, to replace **Donald E. Wilkinson,** retired. **Frederick N. Mercurio** appointed district sales manager, Winston-Salem, N.C., succeeding **Ralph G. Surridge,** retired.

FRISCO.—T.P. Deaton, director of labor relations, named assistant vice president-personnel, Springfield, Mo. **J.P. Steward** ap-


Dirty oil
can't steal
past a
Wix Filter.
When the glued end seal of a filter breaks loose, contaminated oil bypasses—and it's like having no filter at all. That can't happen with Wix Filters. Instead of using glue, we imbed the pleats in heat resistant polyvinyl adhesive, permanently bonding them to the end caps. It's a leakproof seal, unaffected by exposure to high temperature oil. There are a number of other reasons why Wix filters give you more for your money. Ask your Wix man. Or write: Bill Eaton, Sales Manager, Railroad Div., Wix Corporation, Gastonia, North Carolina 28052.
WIX
Circle 31 on coupon page 69

CONGRATULATIONS TO ELECTRO-MOTIVE DIVISION

J.J. TOUREK MFG. CO., SUPPLIER OF PRECISION SCREW MACHINE PRODUCTS AND BALL JOINT LINKAGES TO EMD FOR OVER 30 YEARS, EXTENDS CONGRATULATIONS AND WISHES CONTINUED SUCCESS TO EMD IN RECOGNITION OF THEIR 50 YEARS OF OUTSTANDING CONTRIBUTION TO THE RAILWAY INDUSTRY.

J.J. TOUREK MFG. CO.
1901 SOUTH KILBOURN AVE.
CHICAGO, ILLINOIS 60623

Circle 32 on coupon page 69

pointed recruiting officer, Eastern and Southwestern divisions, Springfield.

Harold P. Burton, manager special services, appointed director special services, to succeed **A.E. Kerr,** who retired June 30 after 42 years of service.

GENESEE & WYOMING.—Oliver E. Ellis, assistant general manager and purchasing agent, Retsof, N.Y., will retire Sept. 1, for health reasons. **P.A. Mastrolio** appointed administrative assistant to the vice president-general manager, and personnel director. **D.E. Arney** appointed purchasing manager and management assistant. Position of assistant general manager abolished.

GULF, MOBILE & OHIO.—C.Y. Hall, manager special equipment, Mobile, Ala., promoted to assistant general sales manager, New Orleans, La. **Aubrey L. Eddins** named manager special equipment; **David E. Bishop,** assistant manager special equipment; and **Mrs. Mary D. Feagin,** manager service department.

LEHIGH & NEW ENGLAND.—Richard B. Wachenfeld elected president, director and member of the executive committee, succeeding **Thomas J. Smith,** former president, **Jersey Central.** Mr. Wachenfeld is vice president and general counsel, Jersey Central and president, **New York & Long Branch, Raritan River,** and **Central of Pennsylvania.**

LEHIGH VALLEY.—At New York, **James J. Donohue,** general freight agent, promoted to freight traffic manager; **George E. Leh,** assistant general freight agent, promoted to general freight agent; **Thomas J. McBride** named assistant general freight agent-rates; **Walter J. Freeman** appointed assistant general freight agent-divisions.

John A. D'Auria, assistant freight sales manager, New York, appointed freight sales manager, Newark, N.J. **John R. Tighe** named division sales manager, Newark.

Donald C. Sikora appointed supervisor-special equipment, Buffalo, N.Y.

MISSOURI PACIFIC-TEXAS & PACIFIC.—Joseph C. Hullihan named manager-transportation services, St. Louis. **W. Wesley Johnson** appointed district sales manager, New Orleans, and **G. Lane Corley, Jr.,** sales manager, Monroe, La. **George J. Schmidt,** regional sales manager, Denver, retired July 31 after 43 years' service.

NORFOLK & WESTERN.—William A. Martin has joined the N&W as manager of news service, Roanoke, Va., replacing **Robert W. Pendergast,** who resigned June 30, to become director of public relations and advertising, Robertshaw Controls, Richmond. Mr. Martin was formerly associated with the New York Journal of Commerce in Washington and earlier with Traffic World at Roanoke.

Robert H. Kase appointed to the new position of director operating systems, Roanoke. He will coordinate activity between the Transportation, Engineering, Motive Power and Equipment, and Computer Services departments. Mr. Kase was formerly manager, district network operations, Computer Sciences Corp., Oak Brook, Ill., prior to which he served the Chicago & North Western and the former Pennsylvania.

James E. Walsh, tax attorney, appointed assistant director-state and local taxes. **Ibra W. Bent,** tax accountant, promoted to general tax accountant. **Hazel T. Brown,** assistant tax agent, named tax agent.

Jack R. Foster, road foreman of engines, Chicago Terminal division, promoted to trainmaster of the division, to succeed **J.J. Gillespie,** transferred.

C.W. Dod, Jr., assistant general manager transportation, System Operations Center, promoted to assistant chief engineer-maintenance, Roanoke. Other promotions: **Henry E. Dearing,** engineer of bridges, to senior engineer-construction, Roanoke; **Edward Bond,** senior assistant engineer-structures, to engineer of bridges, Roanoke; **F.R. Gibson,** structural designer to senior assistant engineer structures, Roanoke; **B.J. Carter,** project engineer, Bluefield, W. Va., to division engineer-construction, Portsmouth, Ohio; **W.T. Anders,** resident engineer, to project engineer, Bluefield; **C.D. Wood, Jr.,** labor and material analyst, Roanoke, to resident engineer, Bluefield. **C.M. Burnette,** assistant construction engineer, to principal assistant engineer, Roanoke; **W.M. Snow,** engineer planning, Cleveland, to assistant construction engineer, Roanoke; **R.E. Kuehner,** assistant engineer bridges and buildings, Cleveland, to engineer planning; **R.K. Holmes,** division engineer-construction, Bellevue, Ohio, to assistant engineer, bridges and buildings, Cleveland; **J.E. D'Anniballe,** assistant engineer, Bellevue, to division engineer-construction, Bellevue.

Paul E. Stitt, director transportation, System Operations Center, promoted to senior director transportation, Roanoke. **Thomas I. DeBusk, Jr.,** assistant director transportation, succeeds Mr. Stitt. **James F. Kinder,** system supervisor, succeeds Mr. DeBusk. *(Continued on page 78)*

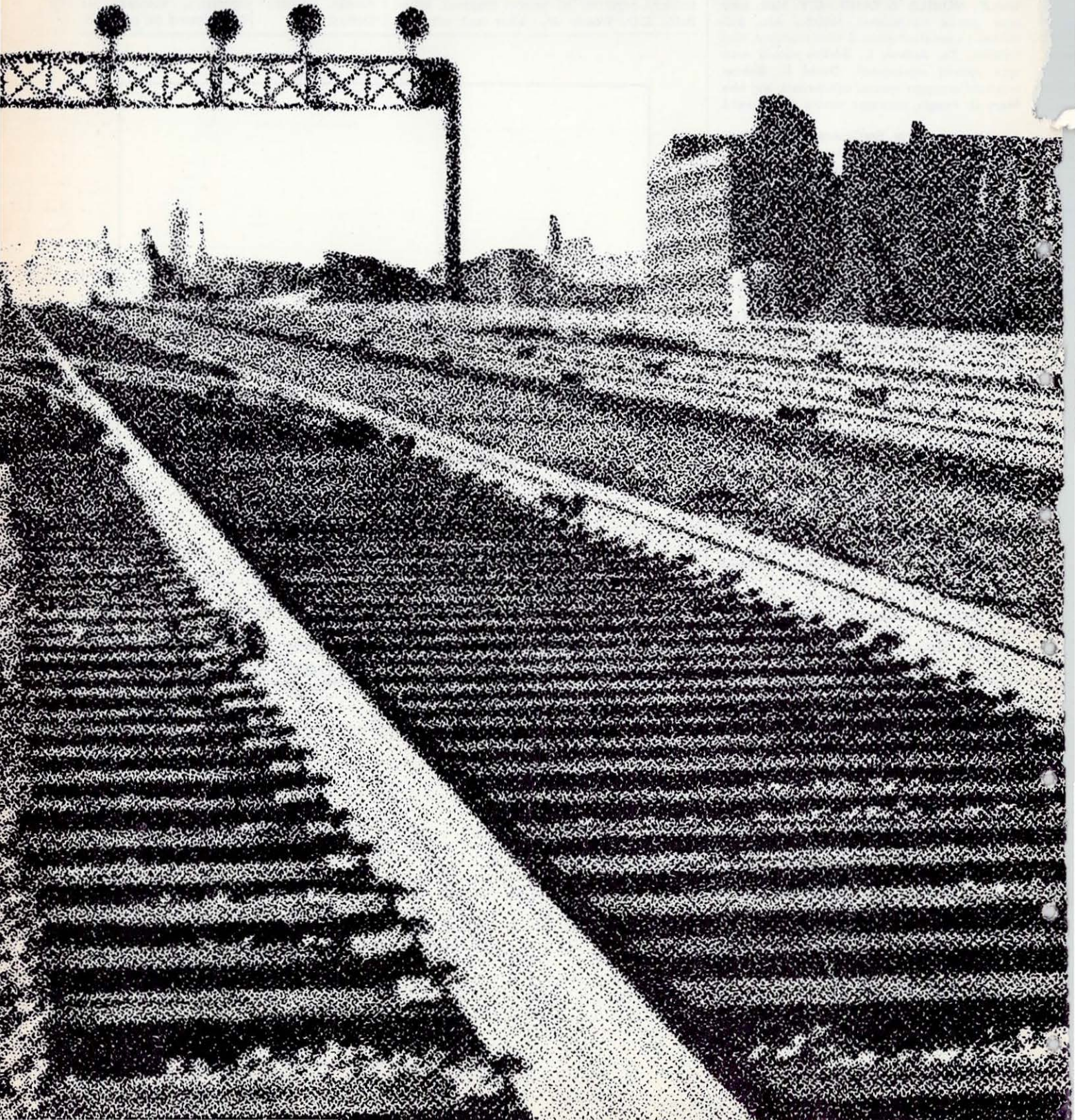
HAPPY
FIFTIETH
ANNIVERSARY

Perfect Circle | DANA

Circle 33 on coupon page 69

An open letter to the railroad supply industry:

THE RAILROADS NEED OUR HELP!



Passage of The Surface Transportation Act of 1971 (Hartke-Adams Bill) is vitally important. Enactment will help the railroads regain financial stability and enable them to rebuild. And this is important to all of us.

We should make our collective voice heard to help get the legislation our customers so desperately need.

Here is what Edgewater has done. We would like you to consider doing it, too.

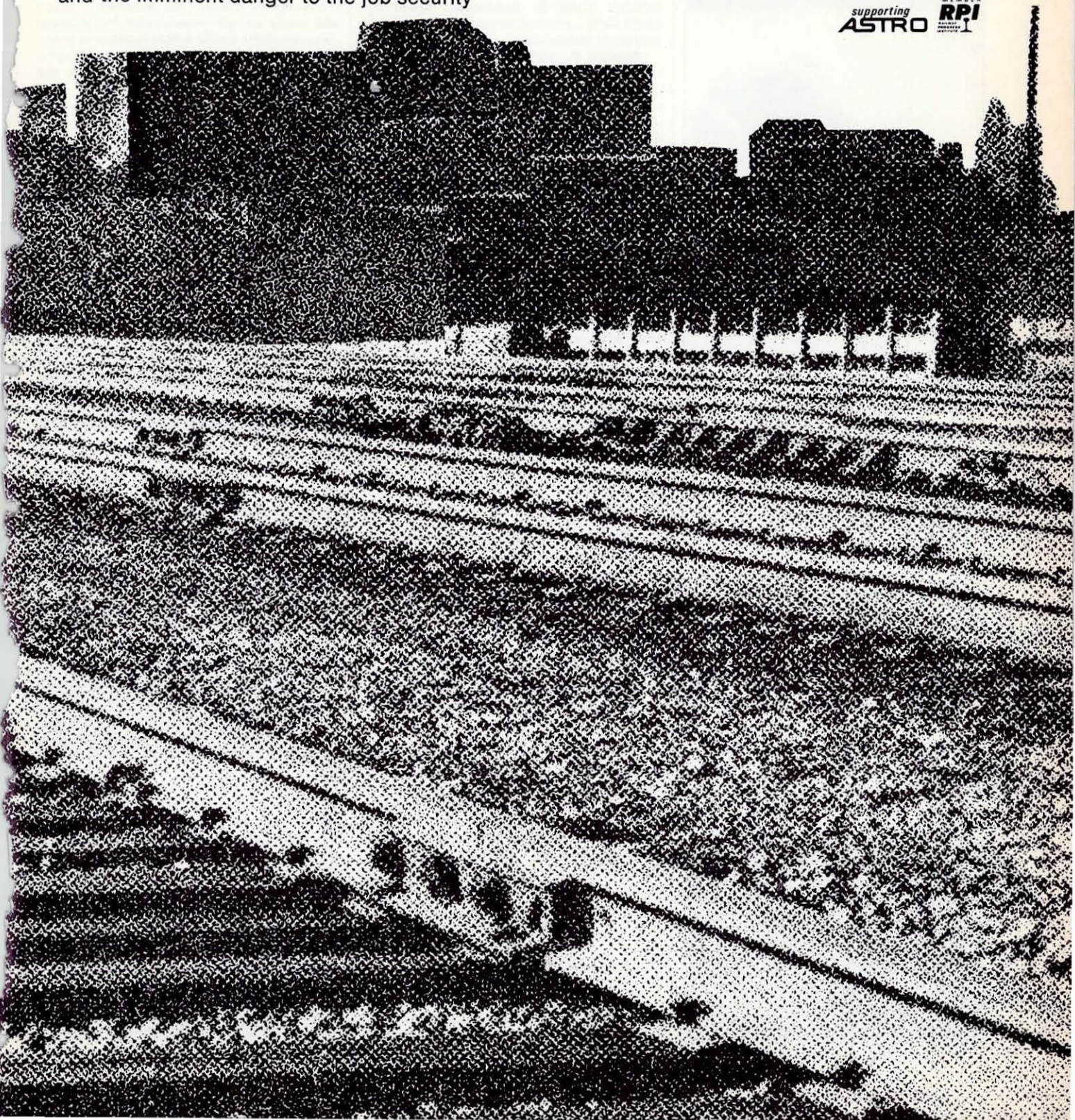
A letter was sent to our state senators and congressmen, and to each member of the Senate and House Commerce Committees, stating our concern over the railroad economy and the imminent danger to the job security of hundreds of thousands of people. Approval of House Bill 11207, and Senate Bill 2362, was urged.

It was endorsed by more than 400 Edgewater employees.

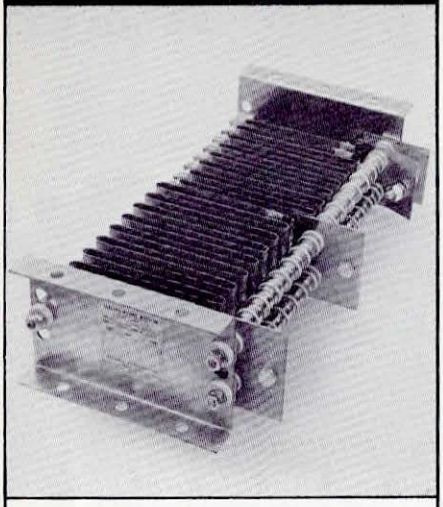
We've been putting wheels under America's railroads for over 50 years. Now, we wish you would join us in putting wheels under this legislation. Let's help the railroads. Let's help ourselves. Let's write, immediately.

EDGEWATER CORPORATION
Dept. 20, Oakmont, Pa. 15139
Phone (412) 828-4000 Plants: Oakmont, Pa., Latrobe, Pa.

supporting ASTRO MEMBER RPI



A SALUTE
To
ELECTRO-MOTIVE
DIVISION
On
Their 50th
Anniversary



DYNAMIC
CORPORATION
manufacturers of:

- Resistors
- Engineering Design
- Plastic Molders
- Control Panels and Desks
- Bulk Grease Storage Tanks
- Junction Boxes
- Custom Fabricating

DYNAMIC
CORPORATION
Box 67 - Road 53
Montmorenci, Indiana 47962

Circle 35 on coupon page 69

(Continued from page 75)

PENN CENTRAL.—Has established a Real Estate Reorganization Board to combine real estate marketing, real estate valuation and counseling, financial, legal and administrative capabilities into one group.

James E. Stuart, general superintendent-car shops, Altoona, appointed general mechanical superintendent-freight cars, Philadelphia, succeeding **Edward H. Wright,** resigned.

Raymond C. Lepley, assistant treasurer, promoted to treasurer, Philadelphia, succeeding **John H. Shaffer.**

William J. Marko, superintendent of building maintenance and utilities, Grand Central Terminal, New York, appointed regional engineer-structures, Metropolitan Region. He succeeds **Louis B. Rasmussen,** named engineer-field production-structures, Eastern Region, Philadelphia.

Richard P. McFeaters, division superintendent, Buffalo, transferred to the Detroit Division, succeeding **George E. Williamson,** who replaces **Kenneth F. Webel** as superintendent, Allegheny Division, Altoona, Pa. Mr. Webel succeeds Mr. McFeaters on the Buffalo Division.

PEORIA & PEKIN UNION.—**Frank S. Jenkins** appointed to the new position of assistant general manager. Mr. Jenkins was formerly superintendent, **Illinois Terminal** at Decatur. **Francis Mueller** appointed to the new position of director of personnel. Mr. Mueller has been with the company since 1948 and will be responsible for all matters pertaining to personnel, administrative, and labor relations.

PITTSBURG & SHAWMUT.—**Gordon A. Davids** appointed vice president maintenance and engineering, Brookville, Pa. Mr. Davids was formerly with the **Delaware & Hudson** where he held positions of design engineer at Albany, N.Y., and supervisor of track at Oneonta, N.Y.

READING.—U.S. District Court Judge William J. Ditter on Aug. 7 approved the appointment of **Salomon Brothers** as financial consultants for the Reading.

SEABOARD COAST LINE.—**Jack Cherry Jr.** named superintendent terminals, with responsibility for the railroad's operations in the Richmond-Petersburg-Hopewell area, succeeding **Stuart M. Duffer,** appointed superintendent, Savannah, Ga., Division. Mr. Cherry was formerly vice president and general manager, **Winston-Salem Southbound** at Winston-Salem, N.C.

UNION PACIFIC.—**Richard T. Corson** named traffic manager for Oregon, Eastern Washington and Northern Idaho, with headquarters in Portland. He succeeds **George A. Brown,** traffic manager, Northwestern District, who retired recently after 45 years' service. **Donald A. Shum,** assistant traffic manager, Seattle, appointed traffic manager, Chicago. **Paul V. Kemp,** general traffic agent, Tacoma, Wash., transferred to Chicago.

INDUSTRIAL TRAFFIC

Eugene R. Constance, senior rate analyst, Traffic Department, **Morton Salt Co.,** Chicago, has been promoted to manager-private car operations. **Nicholas S. Kiepura** has been appointed assistant traffic manager-Central Region, Rosemont, Ill.

Michael J. Maxwell has been appointed manager of rates, and **Kevin J. Scott,** supervisor of traffic services, **American Metal Climax, Inc.,** New York.

William M. Dolan has been promoted to the newly created corporate position of director-physical distribution, Chemicals and Plastics Group, **Hooker Chemical Corp.,** Niagara Falls, N.Y.

Jim Bloxham has been appointed traffic coordinator, **Port of Seattle,** Wash., replacing **Sandy Glazer,** reassigned to the Port's Chicago-midwest offices. Mr. Bloxham's duties will center on rail consolidation for overland common point traffic which is cargo originating in the Pacific Rim countries and landing in Seattle for immediate trans-shipment to the midwest and east coast.

SUPPLY TRADE

John R. Roser, senior consultant, **Peat, Marwick, Mitchell & Co.,** has been appointed manager, Washington, D.C., office, **ACI Systems Corp.**

L.B. Foster Co. has realigned its Southeastern regional rail department and centralized the entire operation into the Atlanta office. Rail and rail products inventories have been expanded. In conjunction with the reorganization, Foster is offering a free non-

LIGHTING FIXTURES

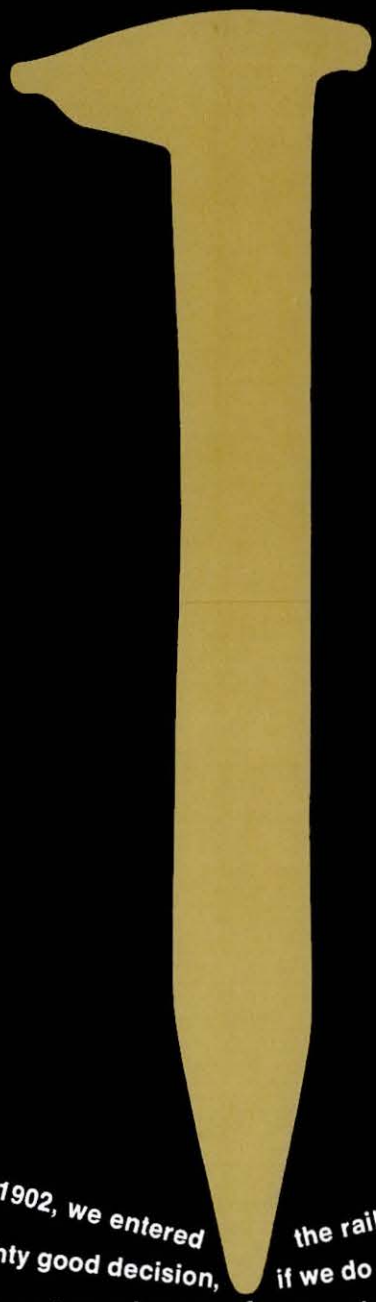
Designed and Manufactured For
LOCOMOTIVES

Gyralite Warning Lights
Classification Lights
Headlight Adapters
Headlights
Utility Lights
Marker Lights
Number Signs
Stacklights
Dome Lights
Cablights
Step Lights

Trans-Lite also supplies: Destination and route number signs, interior and exterior lighting and air distribution equipment for rail cars, cabooses, aircraft and buses. For further information contact:

Trans-Lite, Inc.
P.O. Box 70
Milford, Conn. 06460
Tel. 203-878-8567

Circle 36 on coupon page 69



In 1902, we entered the rail business.
A mighty good decision, if we do say so. Today we're the largest warehouser of new and relay rail, rail accessories and frogs and switches on this continent. Why? Maybe because customers trust our experience. Our fast service. Or because we offer The Trackage Package—a one-stop source for every one of your track needs.

Write and see what The Foster Line holds for you. L. B. Foster Co., Seven Parkway Center, Pittsburgh, Pa. 15220. Or call your local sales office.

FOSTER

L.B.FOSTER COMPANY

2¢

We take a small cut.

Colorado meat packers have a prime reason for shipping their steaks Burlington Northern: We take them 915 miles to Chicago markets for about 2¢ a pound.

We trim their shipping costs down to the bone by keeping our railroad up to the minute.

Whether you're shipping steaks or brakes or cornflakes, you owe it to yourself to find out how a modern railroad can help you hold the line on distribution costs. Everybody's looking for a better way to go.

Maybe we've got yours.

BURLINGTON NORTHERN

The better we get, the better it is for you.

obligatory track inspection program. **Edwin E. Webster** is group product manager, rail department. He is assisted by **D.A. Lawson**, rail products manager; **W.A. Sanders**, regional rail sales representative; **Norris Muse**, regional sales administrator; and **H.P. Jones**, rail inspector.

John Marohnic, assistant personnel director, **Electro-Motive Division of General Motors**, has been promoted to director of personnel, to succeed **Eugene X. Humphrey**, who retired June 30.

William J. Hines has been appointed manager railroad coatings, **Mobil Chemical Co.**, Louisville, Ky., and Edison, N.J.

Jerry J. Rieder has been appointed regional sales manager-new cars, **Berwick Forge & Fabricating**, Division of **Whittaker Corp.**, at Chicago, with responsibility for new car sales to railroad accounts in the midwest, southwest and western regions. Mr. Rieder was formerly with FreightMaster.

L. Fred Gieg, Jr., manager, Buffalo sales district, **United States Steel Corp.**, has been appointed general manager of bar, semi-finished and railroad products, commercial department, succeeding **Burton C. Smith**, retired after 39 years with the corporation.

Martin W. Kraegel, assistant vice president-manufacturing, **American Steel Foundries**, has been appointed vice president-manufacturing, to succeed **Richard O. Tibbals**, who becomes vice president-special assignments.

A.P. Steinhauser, works manager at ASF's Granite City, Ill., steel foundry, succeeds Mr. Kraegel.

Headquarters offices for the Ro/Ro (roll-on/roll-off) Division, **REALCO**, are at 25 Commerce Drive, Cranford, N.J.

S. William Yost has been named to the newly created position of assistant to the president, **Evans Products Co.**

L.B. Foster Co. has opened a district office at Tulsa, Okla., to serve the industrial, construction, railroad and utility markets in Oklahoma and Arkansas. The office is headed by **Charles B. Chenoweth**, district manager.

W.C. Wilson appointed a special southeastern distributor for the Thermit Rail Welding Process, **Thermex Metallurgical, Inc.**, at Arlington, Va.

Martin Helmus, manager of railroad sales, **Henkels & McCoy, Inc.**, Blue Bell, Pa., has been appointed vice president.

W.P. Lipscomb, regional engineer, railroad sales, Metal Products Division, **Armco Steel Corp.**, at Houston, Tex., has retired after 32 years of service.

B.W. Parsons Co., St. Paul, and **Industrial Specialties Co.**, Pittsburgh, have been named manufacturer's representatives for **ACF Industries' Amcar Division**.

Johnston N. Boyden, assistant general manager, **Timken do Brasil**, has been promoted to general manager, succeeding **Evan R. Evans**, who has returned to the United States for re-assignment.

J.A. Burger, district manager, and **J.A. Glantz**, district representative, will be located at the new district office for Specialty Chemicals District 65, **Nalco Chemical Co.**, at Chesterland, Ohio.

Albert E. Cary, assistant industrial sales manager, **Edison Battery Division, McGraw-Edison Co.**, Bloomfield, N.J., has been named general sales manager-rail transit.

Nationwide Transportation Products, Inc., Cleveland, has been selected to represent the **Fastener Division, Lamson & Sessions Co.**, to the railroad and traction industries of the U.S. and Canada.

George A. Sawyer has been named manager of division business development, Hydro and Community Facilities Division, **Bechtel Incorporated**, San Francisco. **Ivan W. Nealon** will assist Mr. Sawyer and be responsible for global activities in the transportation field, including rapid transit, airport development and railroad electrification projects.

T.B. Jones has been appointed vice president and western regional manager, **General Cable Corp.**, Los Angeles, with responsibility for sales in transportation, aerospace, power utilities, and general industry.

(Continued on page 86)

Congratulations
E.M.D.
on your
50th
Anniversary

QUALITY
RESISTANCE PRODUCTS
MILWAUKEE
RESISTOR CORPORATION
700 WEST VIRGINIA STREET
MILWAUKEE, WISCONSIN
53204

Circle 38 on coupon page 69

Are your salesmen being properly trained?

Transportation Industry Consultants, Inc., a firm with a proven track record in training transportation people, announces a new series of practical, down-to-earth workshops for air cargo, motor, rail, and water carrier salesmen. All workshops will be conducted by Herbert Jeff, President of TIC. Mr. Jeff's many years of practical experience in sales and operations management in the transportation industry uniquely qualify him to help you develop your transportation salesmen. During the past six years, Mr. Jeff has conducted training programs for motor carrier, rail, air cargo, and water carrier salesmen throughout the U. S. He is the Editor of **The Transportation Salesman** and serves many carrier clients.

Twelve one-day workshops for professional transportation salesmen **In all modes** will be conducted in key cities.

The enrollment in each workshop will be limited to 35 persons in order to get participation from all salesmen registered. Registration fee is $50.00 per person, including all materials and lunch. All workshops conducted from 9:00 a.m. to 5:00 p.m.

SEP 19 CHICAGO	OCT 17 KANSAS CITY	NOV 8 DETROIT
SEP 20 CLEVELAND	OCT 18 ST. LOUIS	NOV 9 CINCINNATI
SEP 26 LOS ANGELES	OCT 19 INDIANAPOLIS	NOV 28 CHARLOTTE
SEP 27 SAN FRANCISCO	NOV 7 ST. PAUL	NOV 29 NEW YORK CITY

To register your salesmen, call or write:
Herbert Jeff, President
TRANSPORTATION INDUSTRY CONSULTANTS, INC.
#12 Office Park Circle
Birmingham, Alabama 35223
(205) 879-8503

Circle 39 on coupon page 69

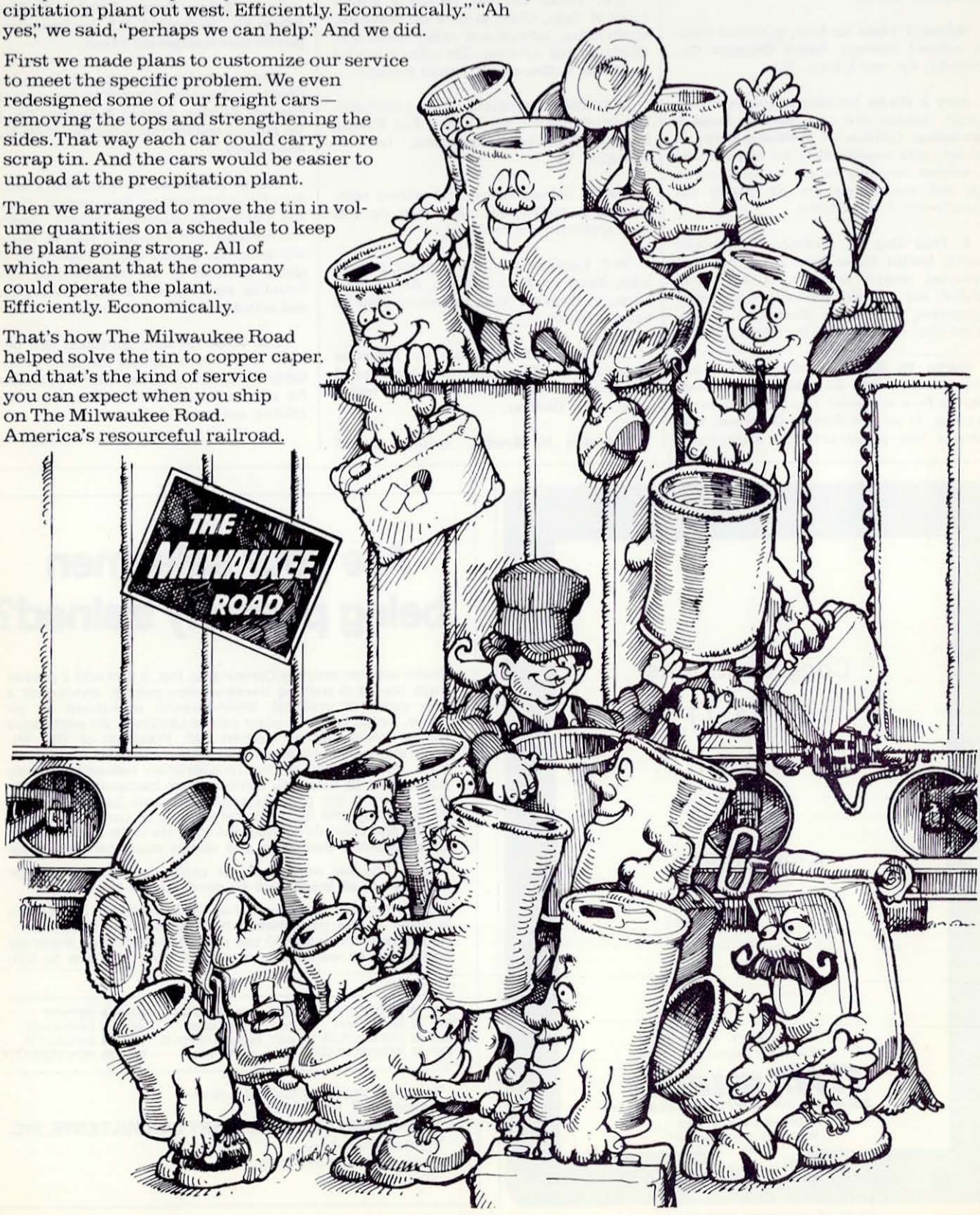
THE TIN TO COPPER CAPER.

Once there was a company that discovered a way to change scrap tin cans to copper. "It's not magic," they said to us at The Milwaukee Road. "We use a leaching process. But there's one thing missing. We need a way to transport the scrap tin from the principal sources in the Midwest to our precipitation plant out west. Efficiently. Economically." "Ah yes," we said, "perhaps we can help." And we did.

First we made plans to customize our service to meet the specific problem. We even redesigned some of our freight cars—removing the tops and strengthening the sides. That way each car could carry more scrap tin. And the cars would be easier to unload at the precipitation plant.

Then we arranged to move the tin in volume quantities on a schedule to keep the plant going strong. All of which meant that the company could operate the plant. Efficiently. Economically.

That's how The Milwaukee Road helped solve the tin to copper caper. And that's the kind of service you can expect when you ship on The Milwaukee Road. America's resourceful railroad.



Market Outlook

CAR LOADINGS

Loadings of revenue freight in the week ended Aug. 12 totaled 514,864 cars, according to the Association of American Railroads. This was an increase of 8,922 cars, or 1.8%, compared with the previous week, and an increase of 11,006 cars, or 2.2%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended Aug. 12 are estimated at 15.4 billion, an increase of 5.8% above the corresponding week of 1971.

REVENUE FREIGHT CARLOADINGS

Commodity	Aug. 12 week	Aug. 5 week
Grain	30,722	29,192
Farm products	9,840	9,175
Metallic ores	44,737	41,296
Coal	92,396	90,357
Crushed stone, gravel & sand	30,748	29,786
Nonmetallic minerals	11,189	10,820
Grain mill products	17,958	18,275
Food and kindred products	22,967	23,257
Primary forest products	25,049	25,105
Lumber & wood products (except furniture)	17,584	17,884
Pulp, paper & allied products	22,375	23,260
Chemicals & allied products	24,216	23,371
Petroleum products	9,692	8,998
Stone, clay & glass products	22,517	22,122
Coke	7,204	7,138
Metals & products	22,594	23,930
Motor vehicles & equipment	16,166	14,864
Waste & scrap materials	14,496	13,684
Forwarder & shipper assn. traffic	6,290	6,412
All other carloads	65,626	66,645
LCL traffic	498	491
Total cars loaded	**514,864**	**506,062**
Cumulative total, 32 weeks	1972	1971
	15,672,306	15,941,855
Estimated revenue ton-miles (billions) 32 weeks	471.6	459.8

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended Aug. 5 totaled 25,522 cars (10.3% above the corresponding week last year, when selective strikes were in progress) and 42,855 trailers or containers (up 9.6% from 1971). Cumulative volume for the first 31 weeks of 1972 is 761,032 cars (up 9.0% from last year) and 1,275,643 trailers or containers (up 12.5% from 1971). In addition to freight, 1,981 cars carrying 3,444 trailers or containers of mail and express traffic were handled piggyback. Cumulative figures for the first 31 weeks of 1972 are 71,704 cars (down 24.7% from the 1971 total, and 115,243 trailers or containers (down 19.2% from 1971).

IN CANADA

10 days ending	Tons of Revenue Freight	Cumulative Totals
July 31, 1972	4,847,203	118,223,572
July 31, 1971	6,331,384	117,820,217

FREIGHT-TRAIN CARS

● *Detroit, Toledo & Ironton.*—Ordered 30 100-ton gondolas from Greenville Steel Car for delivery in September. The cars are to be fitted for carrying bundled sheet steel stock and will have 10-inch-travel end-of-car cushioning.

● *Seaboard Coast Line.*—Ordered 200 woodchip hopper cars at a cost of over $4.25 million from Pullman-Standard. Delivery of the 100-ton 7000-cu-ft cars is to be made in November and December.

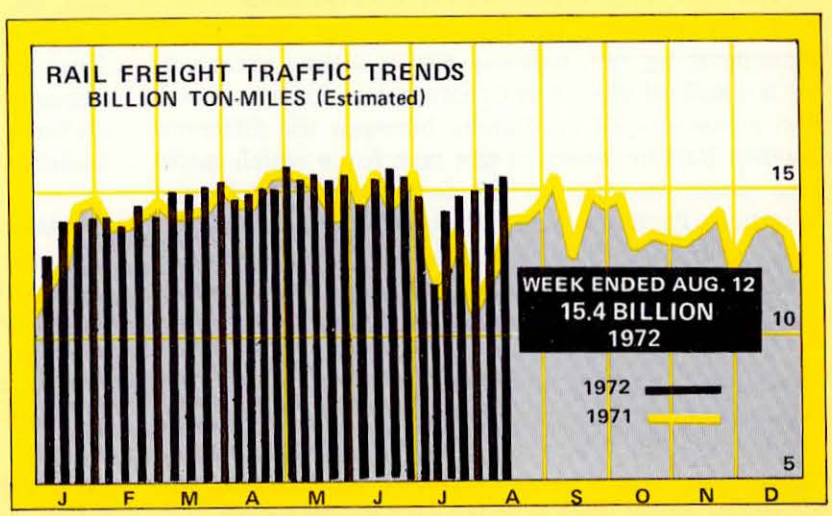
● *Southern Pacific.*—Placed orders for 1,300 new wide-door box cars valued at $26 million. Gunderson, Inc., of Portland, Ore., will supply 900 cars, a $16-million order; Pacific Car & Foundry of Renton, Wash., will build the remaining 400 cars, worth $10 million. The contracts are part of SP's record $196-million program for new freight cars and locomotives during 1972.

● *Trailer Train.*—Ordered 115 68-ft bulkhead flat cars from Bethlehem Steel and 50 89-ft 4-in. standard-level flat cars from Pullman-Standard. This brings Trailer Train's purchases of new cars since Jan. 1, 1972, to 1,007. TTX now has 60,407 cars in service or on order.

NEW FACILITIES

● *Kansas City Southern.*—Has contracted with ACI Systems Corp. to install a rail terminal management system at Deramus Yard, Shreveport, La. The system will include seven automatic car identification rail scanners, two aci yard scanners, two wheel sensor monitors to receive inputs from 120 directional wheel sensors, two PDP 11/20 20k memory computers, plus associated peripheral devices and communications interface to the KCS central computer in Kansas City.

● *Santa Fe.*— Ordered centralized traffic control equipment from WABCO's Signal & Communications Division for installation between San Bernardino and Barstow, Calif. Among the items ordered are a 12-ft traffic control center, a wired office relay logic rack and WABCO 514 code equipment.



Source: Association of American Railroads

Moving Freight

RUN-THROUGH OPERATIONS INCREASE

The number of run-through trains has nearly doubled in the last year, the AAR told the Interstate Commerce Commission in a quarterly progress report made public July 31. "Dramatic savings in transit time" have resulted from implementation of the concept, said R.R. Manion, vice president of the AAR's Operations and Maintenance Department. Two railroads reduced interchange at one terminal from 15 hours to three hours. Two other carriers cut interchange time at a major gateway from two days to six hours.

DOT STUDIES INTERMODAL TRANSPORT

The Department of Transportation on Aug. 5 awarded a $490,000 contract to Reebie Associates of Greenwich, Conn., for a feasibility study of a nationwide intermodal freight transportation network. DOT Secretary John A. Volpe said preliminary investigations by the Federal Railroad Administration indicate that such a network could "make significant savings in distribution costs to the nation's shippers as well as improve the service package offered by the nation's rail carriers."

CN INTRODUCES INSTANT TRACING

Instant tracing of freight cars, containers and piggyback trailers moving on Canadian National is now possible with a customer-to-computer communications system which went into service last month. The communications system allows shippers and consignees to communicate directly via Telex with CN's central computer in Montreal which responds instantly with a status report. The customer need only know a Telex dialing code and the number of the car, trailer or container.

STANDARD PAPERWORK SPEEDS CONTAINERS

U.S. Department of Commerce has announced agreement by rail, highway and maritime operators on a standard equipment interchange form to speed the movement of containers between the different modes. Rail members of the task force which spent two years drawing up the form were T.A. Fante, Southern Pacific manager for intermodal services, B. Ray Osborne, Southern manager of intermodal transportation services, and Thomas R. Campbell of AAR's Operating-Transportation Division.

COAL PRODUCED $1.3 BILLION

National Coal Association reports Class I railroads originated 355 million tons of bituminous coal in 1971, for which they received $1.3 billion in revenues. Mines were shut for 45 days by strikes.

RI TAKES AN INTERMODAL APPROACH

Rock Island is hoping for an increase in bulk-commodity traffic, through a new rail/truck distribution system aimed at serving customers at off-rail points and consignees who don't want delivery in carload quantities. Rail/truck transloading distribution centers have been set up at Chicago, Memphis, Fort Worth, Houston, Omaha and the Twin Cities. Among the advantages cited by RI for the new system: Lower-cost transportation, faster delivery, reductions in warehousing and other handling problems, and increased car utilization.

PENN CENTRAL PROPOSES "PIPELINE ON WHEELS"

Interstate Energy Co. of Houston, Tex., is seeking eminent domain rights in Pennsylvania for a $50-million, 80-mile pipeline to move low-sulphur oil from the port of Marcus Hook, near Chester, to power-generating facilities of the Pennsylvania Power & Light Co. at Martins Creek. Opposing the petition, Penn Central has proposed instead a "pipeline on wheels"—i.e. unit trains. Officials of towns in the path of the pipeline's proposed 50-ft-wide right of way, and environmentalists, are on PC's side. When all expenses are figured in, the cost to the utility would be roughly the same by pipeline or by rail—about 39 cents per barrel.

NEW MOPAC FACILITY SPEEDS DELIVERIES

Missouri Pacific has opened a new intermodal freight center adjacent to its Centennial Yard at Fort Worth, Tex. A metal building houses offices and merchandise handling areas. An adjoining sheltered platform is used for transloading shipments from freight cars to trailers. A 9,000-sq-ft concrete table-top ramp has three tracks at each end for loading and unloading of trailers. Forty-five flat cars can be accommodated simultaneously. Container handling equipment includes a 25-ton gantry crane. One result of the new operation, says terminal manager C.O. Grissom, is that customers now get trailers "on the average within two hours after the trailers arrive at the terminal."

CN HANDLES BIG STEEL PIPE MOVE

Canadian National in mid-August moved six solid trainloads of 32-inch steel pipe in 80-foot lengths from Camrose, Alta., to various points in northwestern Ontario—a total of 370,000 feet of pipe needed by Trans-Canada Pipelines to loop its main gas transmission line in Saskatchewan, Manitoba and Ontario. Each train was made up of 80 flat cars. Each load required two of the 52-ft flat cars with three idlers.

We've got more new GM cars than anyone else in the world.

Good thing, too.

Because we rent more GM cars than anyone else in the world.

As a matter of fact, on any given day we can put upwards of fifty thousand people on the road.

And that fact, we must confess, staggers us a bit.

Why, it seems like just yesterday we were just a small car rental company. And here we are bucking heads with the big boys in New York, Boston, Chicago, San Francisco, L.A. And just about every other city you can name.

Not to mention all those cities you probably can't name.

Today, there are actually some 2,400 National counters where we can put you behind the wheel of a '72 Chevy (or some other fine car).

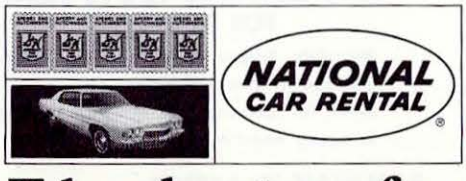
But as grown up as we've become, we haven't outgrown our quaint way of thanking you for your business. We thank you with good old S&H Green Stamps.*

Another perhaps quaint attitude we haven't outgrown. We think reservations are sacred.

When you call to tell us when and where you want a car, that's it. We don't intend to let anyone else rent the car we promise to save for you.

We're determined to treat you like you were still our only customer in the world.

To reserve a car in the U.S. and elsewhere in the world call 800-328-4567 toll free.†



Take advantage of us.

National Car Rental System (in Canada it's Tilden Rent-A-Car). *Valid on U.S. rentals only except where prohibited by law. †In Minnesota call 612-944-1234 collect. © National Car Rental System, Inc. 1972

Back in Stock!

We have just reprinted the popular air brake books by the late C.M. Drennan.

Most of the books have already been reserved and only a limited number are available for sale.

Reserve your set today!

Vol. I
ABC's OF AIR BRAKES

The fundamentals of air brake design, construction and operation as applied to railway cars and locomotives. The key volume in the study of air brakes. Air Brake Dictionary is included.

Vol. II
CAR AIR BRAKES

The construction and operation of car air brakes with detailed diagrams and descriptions of the equipment and its components.

Vol. III
LOCOMOTIVE AIR BRAKES

Locomotive brake devices and equipments discussed in detail in every phase of operation. This volume, as well as volume I and volume II, is interspersed with quizzes-ideal for home study.

PRICES

Single copy $9.00
Two copies (same or assorted) . . . . . $8.00 ea.
Three or more copies (same or assorted) . $7.00 ea.

Simmons-Boardman Publishing Corp.
350 Broadway New York, N.Y. 10013

Gentlemen: Enclosed is $ _____
Please send the following books . . .

— ABC'S OF AIR BRAKES . . . $ ___
— CAR AIR BRAKES . . . . . $ ___
— LOCOMOTIVE AIR BRAKES. $ ___
TOTAL. .$ ___

Name _____
Company _____
Street _____
City, State, Zip _____

(Continued from page 81)

John F. Martin, vice president-marketing, **Paceco**, division of **Fruehauf Corp.**, Alameda, Cal., named president, succeeding **C.D. Ramsden**, who retired July 1. Mr. Ramsden will continue as chairman of the board of **Paceco International, Ltd.**, London, England. **Harry E. Greenwood** succeeds Mr. Martin. Mr. Greenwood was recently vice president and general manager, Clyde Iron Works, Duluth, Minn., and previously was with Paceco as general sales manager from 1966 to 1968.

Frederick K. Schram has been named West Coast Regional manager, **Interpool**, San Francisco.

William E. Savage has been appointed general sales manager, **Carrier-Transicold Co. Ronald J. White**, Chicago district manager, succeeds Mr. Savage as midwest regional manager.

Greenville Steel Car Co., Greenville, Pa., has established a midwest sales office in Suite 303, Clayton Plaza Building, 7700 Clayton Road, St. Louis, Mo. 63117.

R.E. Canzoniero has been appointed special projects manager, **Interpool**, New York. **Jorge Bracho** has been named regional manager, Miami area and South America.

On July 1, the Washington, D.C., sales district office of the **Okonite Co.** moved to the Wood Bldg., Suite 300, 145 Church Street, N.W., P.O. Box 9, Vienna, Va. 22180. **James R. Early** is district manager and **W. Richard Daneker** is sales representative.

On June 28, the Dallas sales district of Okonite moved to 11500 Stemmons Freeway, Suite 145, Dallas, Tex. 75229. **Alex C. Dean, Jr.** is district manager and **Richard Q. Corley** is sales representative.

The Kerite Co. broke ground at Seymour, Conn., on June 26 for the construction of a $500,000 high voltage laboratory to be used for the development of power cables rated as high as 230,000 volts.

Roger D. Weller, director of materials, **St. Louis Car Division, General Steel Industries, Inc.**, has been promoted to the newly created position of vice president-purchasing.

Clavier Corp. has acquired **JDC Communications, Inc.**, manufacturer of telephone carrier equipment. **Robert L. Feistel** appointed director of marketing.

Jerry R. Ludwig has been named general manager of the newly formed Transportation Parts Division, **Bearing Headquarters Co.**, Broadview, Ill., to serve railroads in the midwest.

Fred A. Ufolla has been named sales representative for COBRA brake shoes, Western District, Chicago, **Westinghouse Air Brake Division, WABCO** Transportation Systems Group.

DIVIDENDS DECLARED

CANADA SOUTHERN.—$1.50, semiannual, paid Aug. 1 to holders of record July 17.

NORFOLK & WESTERN.—$1.25, quarterly, payable Sept. 11 to holders of record Aug. 10.

SOO LINE.—new, 62½ cents, paid July 25 to holders of record July 7.

SOUTHERN.—new, 40 cents, quarterly, payable Sept. 15 to holders of record Aug. 15.

SOUTHERN PACIFIC.—52 cents, quarterly, payable Sept. 18 to holders of record Aug. 25.

WEST JERSEY & SEASHORE.— Special gtd., $1.50; common, $1.50, both paid Aug. 11 to holders of record July 28.

WHEELING & LAKE ERIE.—$1.43 3/4, quarterly, paid Aug. 1 to holders of record July 14.

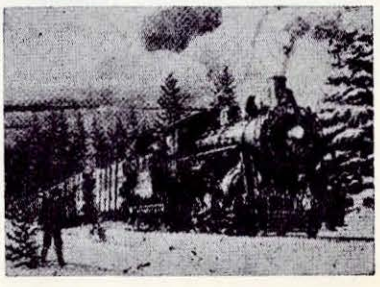
WHITE PASS & YUKON.—12½ cents, semiannual, payable Sept. 15 in Canadian funds to holders of record Sept. 1.

RAILWAY CLASSICS CHRISTMAS CARDS

ASK FOR **FREE** *Colorful Catalog*

ALSO BEAUTIFUL 10 x 15 PRINTS FOR FRAMING

Nostalgic Scenes of Railroading Lithographed in Rich Full Color.
Ideal for personal or business mailing.
Company imprints - one week service.



RAILWAY CLASSICS
102 Cherry Street
Janesville, Wisconsin 53545

Circle 41 on coupon page 69

Advertisers Index

Adams & Westlake Co. 56
Aeroquip Corp. 47
American Air Filter Co. 4
American Steel Foundries 19
ACF Industries, Inc. 63
Burlington Northern 80
Canadian Pacific Rail 58-59
CF&I Steel Corporation 6
Canadian National Railways 17
Chicago, Milwaukee, St. Paul & Pacific R.R. Co. 82
Consolidated Freightways . . . . . IBC
CRECO-Div. of Evans Products Company 31
Dana Corporation 75
Denver & Rio Grande Western R.R. 65
Difco, Inc. 9
Dynamic Corporation 78
Edgewater Corporation 76-77
Electro-Motive Div. of General Motors Corp. IFC-3
Foster Co., L.B. 79
FreightMaster 55
Fruehauf Corporation 72-73
Gunderson, Inc. 60
Houdaille Industries, Inc. 44
Huck Manufacturing Co. 62
Kansas City Southern Lines 71
"K" Line 10
Kemlite Corp. 14
Keystone Railway Equipment Co. 51
Milwaukee Resistor Corp. 81
National Car Rental System, Inc. 85
PPG Industries . . . . . BC
Railway Classics Christmas Cards 86
Railway Educational Bureau 12
Rockwell Manufacturing Co. 20
Seaboard Coast Line Railroad 39
Smith Valve Corp. 38
Southern Pacific Transportation Co. 37
Southern Railway System 48-49
Standard Car Truck Co. 53
Tourek Mfg. Co., J.J. 74
Trans-Lite, Inc. 78
Transportation Industry Consultants, Inc. 81
Union Tank Car Co. 66-67
United States Gypsum Company 11
United States Steel Corp. 24-25
Vapor Corporation 35
Wix Corporation 74
Woodward Governor Company 68

Railmark

Consultants in Corporate Identification Systems, Marketing, Communications Planning, Advertising & Promotion Design. For information, write Railmark Limited, Station Plaza East, Great Neck, N.Y. 11021, U.S.A. Telephone: 212-895-7498 or cable RAILMARK GREATNECKNY.

CHIEF MECHANICAL OFFICER

Progressive Intermodal Transportation Company located in the Northwest requires a Chief Mechanical Officer to take charge of Rail Division Maintenance. Applicants should have proven record in Locomotive and Car Shop Supervision. Reply giving details of experience and qualifications to Box 137, Railway Age, 350 Broadway, New York, New York 10013

NEED A RAILROAD SHOP ???

Let us take care of your sand blasting, painting, lining and general car and locomotive repairs in our new quality job facilities. For further information contact:
Mr. J. N. Kiefer, Jr., Vice President, General Manager and Assistant Secretary, or
Mr. C. E. Fuller, Assistant Vice President-Finance and Traffic
Genesee and Wyoming Railroad Company
Retsof, New York 14539 Telephone: Area Code 716 243-3770

DCO The De Leuw, Cather Organization CONSULTING ENGINEERS
165 W. WACKER DRIVE • CHICAGO 60601
SUBWAYS • RAILROADS • SIGNAL SYSTEMS • PUBLIC TRANSIT • TRAFFIC • PARKING
HIGHWAYS • BRIDGES • PORT DEVELOPMENT • COMMUNITY PLANNING • URBAN RENEWAL
AIRPORTS • MUNICIPAL WORKS • INDUSTRIAL • ENVIRONMENTAL SCIENCE AND ENGINEERING
BOSTON • BUFFALO • NEWARK • NEW YORK • OKLAHOMA CITY • PHILADELPHIA
PORTLAND, OR. • SAN FRANCISCO • SEATTLE • WASHINGTON, D.C.

Experienced Railroad Civil Engineer, presently employed by a major corporation at corporate level in railroad sales, will soon be available for final new engineering or sales assignment. Thoroughly knowledgeable in both the M/W and Mechanical areas. Excellent long established top level contacts. Heavy experience in conducting railroad sales seminars, and in development of complete marketing program for the railroad industry.
Box 138
Railway Age, 350 Broadway, New York, N.Y. 10013

SUPERINTENDENT OF TRACK

SEPTA. . .Southeastern Pennsylvania Transportation Authority. . .is planning and developing now to meet tomorrow's needs. To fulfill our vitally important responsibilities, we're putting together a team of top people in all areas of public transportation.
This key opening calls for someone with an engineering degree and/or six to eight years of supervisory experience in all phases of track maintenance, repair, and construction. You'll report directly to top management, and will handle management tasks within a large subway, elevated, and surface car system.
Salary, benefits, and working conditions are all in keeping with the level of this opening. If you qualify, we cordially invite you to arrange an interview. Send a resume, with salary requirement, to: Mr. Edward Ost, SEPTA, 200 W. Wyoming Av., Phila. Pa. 19140. We're an equal opportunity employer m/f.
SEPTA

USEABLE SECOND-HAND RAILROAD CAR REPAIR PARTS
IRON & STEEL SCRAP
RAILS & ACCESSORIES
PLANT DISMANTLING
RAILWAY EQUIPMENT LEASING
RAILWAY CAR PARTS & SUPPLIES
RAILWAY CARS

THE PURDY CO.

Executive Office—
2400 W. 95th St.
Chicago, Ill. 60642—239-4200
BRANCH OFFICE & YARDS
MADISON, ILLINOIS
OAKLAND, CALIF.
LONG BEACH, CALIF
BELLEVUE, WASH

FOR SALE OR LEASE
1964 85' piggyback, 70 tons Roller bearing—like new
1952 3050 cu. ft. covered hoppers
Merchants Investment Co.
105 W. Madison St.
(suite 1202)
Chicago, Illinois 60602
Phone: (312) 346-4550

FOR SALE
Budd RDC
(Rail Diesel Car)
w/2 275 HP Diesels plus 1 spare. Large inventory of spare parts for above incl. wheelsets and Spicer unit. Will sell everything as a package or car and parts separately or trade for best switcher, pass. cars & $$. Write: Corey Jones, Downtown Area Rapid Transit, Inc., 4328 Fall Creek Pkwy. N.Dr., Indpls. IN 46205, or phone (317)—897-4466 afternoons.

Advertising Sales Department

Chicago, Ill. 60602
29 E. Madison St.
(312) 641-5815
C. James Fisher—vice president—sales
John M. Brennan
regional sales manager
Ronald W. Sweeney

New York, N.Y. 10013
350 Broadway
(212) 966-7700
W. Arthur Cubbage
regional sales manager

Pittsburgh, Pa. 15234
300 Mt. Lebanon Blvd.
(412) 341-0844
Ronald M. Giallonardo
regional sales manager

Dallas, Tex. 75206
Noel Page Building
6400 N. Central Expressway
(214) 361-6972
Joseph Sanders

Los Angeles, Cal. 90025
11704 Wilshire Blvd.
(213) 477-4004
Fred Klaner, Jr.
Philip O. Bowers

Sausalito, Cal. 94965
3030 Bridgeway Building
(415) 332-1481
(415) 332-1482
Lewis A. Vogler

London S.W. 1, England
01-839 6318
67/68 Jermyn St., St. James's
Max F. Holsinger
Kenneth J. Hendry
Stuart K. Elliott

Manchester 22, England
Haletop
Wythenshawe Civic Center
Ian Goulden

Paris, 8e, France
70 Rue de Ponthieu
Stephen Brown-Joussard
Jean-Claude Lamoine

4 Dusseldorf-Nord
Eitelstrasse 32
E. Hillerbrand
Reinhard Schomburg
Ronald Fischer

Tokyo, Japan
Sun Gain Shia, Ltd.
Shiba Nikkatsu Bldg.
13, Shiba Park
Minato-Ku
C.H. Yiu, Managing Director

Viewpoint

A good question, Mr. Volpe, but...

The full text of the U.S. Department of Transportation's long-awaited National Transportation Report, which will run to around 1,000 pages, will not be available until September, but a 25-page "executive summary" (page 54) has been made available by Secretary John A. Volpe. Right now it is required reading for transport lobbyists, who hope to discern in its wooden prose some clues to future Federal policy.

Railroad men can take heart. DOT is beginning to ask the right questions.

No longer are railroads dismissed, as they have so often been dismissed in Washington, with a sigh for the glorious passenger-train past and the pious hope that Amtrak will at least keep the memory alive.

This interesting and important document zeroes in on the real task of the railroads—the production of more than one-third of all intercity frieght service. It squarely faces the greater task that lies ahead, quantitatively and qualitatively. It bluntly spells out the government-imposed inequities which threaten the ability of the railroads to perform this task. It accepts the railroads' own estimates that they need to spend in the present decade alone three times as much money on capital improvements as traditional financing methods will generate. And it poses the all important question:

Can the railroads accomplish all of this under present conditions?

DOT's answer is that they cannot do so "without changes in regulatory practices and some government assistance." There follows a plea for enactment of the two DOT-proposed bills now before Congress—the Transportation Regulatory Modernization Act and the Transportation Assistance Act.

While DOT's assessment of the railroad situation is hearteningly realistic, its allegiance to two pieces of legislation which lie all but forgotten in the Congressional hopper, so lukewarm has been their reception, is less so. There is, Congressional sources were saying last week, no reasonable hope of their becoming law.

There is, however, good reason to hope that the Transportation Act of 1972, which embodies substantial portions of the DOT proposals, can still make it through an election-year Congress.

The STA has the kind of broad support, from the regulated rail and highway and water carriers and from public-interest groups, which protects it from the taint of most special-interest legislation. There is evidence that, given a push by the Administration, it will win the approval of Congress.

Secretary Volpe can help to provide that push.

FILLING THE LEADERSHIP VACUUM

If DOT does not fill the leadership vacuum, there are others who seem willing to step in. One is Senator Lowell Weicker of Connecticut who a few days ago made a strong pitch to the Republican Platform Committee for a plank which would commit the Administration to the takeover of railroad rights-of-way.

That may one day become necessary. But right now, there is a better way—STA.

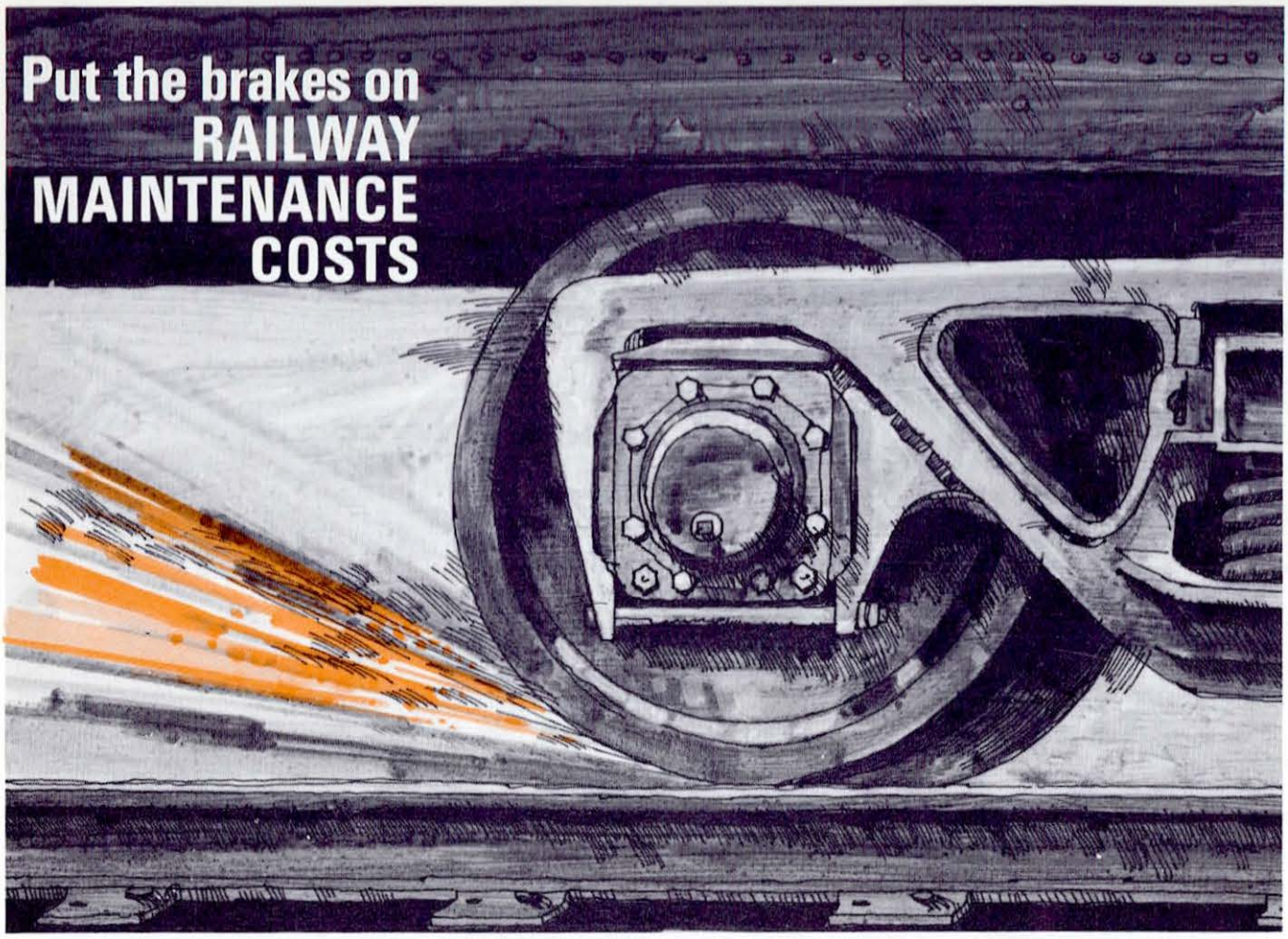
We could not ask for your business without being sure of our ability to back up our courtesy with service

We operate a personal "hometown" business in even the largest of our 150 or more locations. When the 'phone rings, we know we've got to answer with courtesy and helpfulness.

But consider also what we put behind every 'phone call: radio-dispatching for pickup and delivery in most locations...more than 1500 direct-loaded schedules every day and night of the week...some 13,000 experienced people across the United States and Canada, who are as close together as a teletype message or a direct telephone line.

This adds up to service. And it's why we ask for your business. So we say with confidence *call* CF—*the* motor carrier with the people and the places to serve you better.

CONSOLIDATED FREIGHTWAYS



MEMBER RPI

Cars, bridges, storage facilities, other properties . . .

Whatever your maintenance problem, PPG has a coating to help you cut costs.

Pittsburgh® Paints has a complete family of quality coatings formulated to meet the stringent standards of railway maintenance and structural engineers. Professionally applied, these finishes are designed to protect longer, weather better and resist wear.

Carhide® Epoxy Ester Coatings. Recommended for application to steel, stainless steel and aluminum. Superior to oil and alkyd coatings and the equal of phenolic systems in alkali and acid resistance.

Coal Cat® Epoxy Coating. Coal tar-epoxy coating in black only. Ideal for bridge construction below the road bed. Resistant to various alkalies, salts and acid. Excellent for concrete surfaces.

Columbia #8 Interior Liner. A proven liner system for tank cars and for storage and transportation of liquid caustic solutions up to 280°. Available direct or through licensed applicators.

Carhide® Acid and Alkali Vinyl Coatings. Lengthens the life of freight cars, cuts cost of maintenance. Protects covered hopper cars against salt, industrial fumes and A & A spillage.

Aquaneo® Latex Lining System. A smooth, tough, tightly adhering film. Flexible. Impact resistant. Protects covered or open top hopper cars and storage vessels against caustic acids and water.

Polyclutch® Lining Systems. Two-component Epoxy Finishing systems. Excellent track record in hopper car transportation and stationary storage of dry commodities.

Double Cover® Direct-to-Metal Vinyl Coatings. One coat, high film protection. Dries by solvent evaporation. Tough, tightly-adhering plastic film. Resists chemicals.

Pitthane® Liner. Moisture-cured urethane coating over a properly primed surface for abrasion resistance in hopper car service. Also as clear coating or over PPG Double Cover Polyclutch.

Stationhide® Coatings. Primers, undercoaters and finishing materials for railway properties and rolling equipment. Exterior and interior coatings in a wide range of colors.

Solvent pollution problems? PPG can help you by recommending proper coating systems.

For work-saving, money-saving facts write to PPG Industries, Inc., One Gateway Center, 16W, Pittsburgh, Pa. 15222.

PPG: a Concern for the Future

PPG INDUSTRIES

Circle 1 on coupon page 69